# The Chemical Age

**A Weekly Journal Devoted to Industrial and Engineering Chemistry**

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## Contents



*NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.*

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## Awaiting the Decision

THE dyestuffs industry and the public generally are still without any indication of the Government's intentions concerning the continuance or non-continuance of the Dyestuffs Act, though next January we shall come to the end of the ten years period for which the measure was originally passed. It is not for want of being reminded of the situation. The question has been raised in Parliament, public discussions have taken place, and important bodies have issued memoranda setting forth their conclusions. The Government are certainly leaving it a little late. One can understand their hesitation in committing themselves, in a case that would be quoted as a test and precedent, to the principle of protecting one particular industry by the exclusion of all competitive imports, except those admitted under licence. All the same, the delay is to be regretted, for, if it should happen that the Act is not renewed and the home dyestuffs market is suddenly thrown open to world competition, the manufacturers may reasonably complain that they were entitled to some reasonably long notice of the change of conditions they have to prepare for. The longer the Government decision is withheld, the more ground there will be for asking for at least some period of grace before dyestuffs manufacture in this country is changed from a partially protected into an entirely unprotected industry. This matter is no mere party issue. It is a practical business problem, and is being considered from that point of view. It affects a very large body of workpeople, the maintenance of great chemical plants, the security of essential supplies for the textile industries, and—most important of all from the scientific side—the continuance and development of a great school of organic chemistry and of opportunities for the employment of highly-trained chemists. The decline of the British dyestuffs industry—once lost but now recovered—would mean disastrous loss in all these directions.

To the many expressions of opinion on the subject of the Act, two more of an interesting and authoritative character are added this week. Dr. E. F. Armstrong's address to the Society of Dyers and Colourists constitutes a judicial summing up of the position. A distinguished organic chemist, with a considerable experience of large scale industry, for some time—indeed, during some of the most critical years—managing director of the British Dyestuffs Corporation, Dr. Armstrong is singularly well qualified to speak with weight on the question. His conclusions are that, under the Act, the foundations of a British dyestuffs industry have been well and truly laid, that even under the Act the balance of advantage lies clearly on the side of the users, that there is everything to lose by the withdrawal of protection from this important key industry at this stage and no countervailing advantages that would make the risk worth while. It was the consumers who demanded, when their dyestuffs supplies were suddenly cut off during the war, that "never again" should they be left at the mercy of a foreign nation for their essential needs. It is the consumers who, in spite of any temporary advantage of lower prices, may suffer most in the long run from the reimposition of foreign monopolies.

The second pronouncement is that of the Institute of Chemistry, whose memorandum is reproduced in this issue. The Institute approaches the subject from the points of view of the education of British chemists and the progress of research. It has come, after careful consideration, to the conclusion that the Dyestuffs Act has had a most beneficial effect in the establishment of a national dyestuffs industry, that this industrial development has had a favourable reaction on the development of our schools of chemistry and on the growth of other industries dealing with fine chemicals, and that the number of well-trained chemists available for the service of the country is now larger than in any preceding period. On these grounds the Council of the Institute urges that the Act should remain in operation on similar lines for a further period. No doubt steps have been taken to acquaint the Government with these and similar expressions

of opinion. In view of the number of such declarations and the scientific and commercial weight behind them, the Government will need some courage to answer: "No, the Act was passed for ten years and no longer, and must now come to an end." It must be either that or a continuance in some form of the present arrangement.

## Coke Oven By-Products

MR. J. B. DEAKIN, in his presidential address to the Coke Oven Managers' Association, draws attention to the serious position of some of their by-products. It is no surprise to hear that by-product sulphate of ammonia has almost ceased to be remunerative, and that the President sees no prospect of successful competition with synthetic nitrogen compounds. He clings to a hope, however, that chemists may perfect a simple and economic method of fixing ammonia with a sulphur radicle prepared directly from the sulphuretted hydrogen in the crude coke oven gas. Though not in so bad a state as the sulphate branch, the immediate outlook for tar is also unsatisfactory. The position may be eased by the more general use of British tar for roads, by its use of a liquid fuel (as was the practice in the United States), and finally by the formation of a National Association of Tar Producers, with powers to determine not only the selling price of road tar but also the proportion of crude tar to be converted into road tar. Gas is the one by-product which the coke oven managers look most hopefully to as a future source of revenue.

## Somebody's Opportunity

LONDON and Liverpool stocks over 100,000 tons, a plantation industry disorganised, rubber about 4d. a pound. These are stern, serious facts of the moment of much more than passing concern to those financially interested, for indeed they are also of vital importance to thousands of highly-trained experienced men and to the eastern portions of the Empire. The question may well be asked, what are we doing to make use of this glut of rubber now available at such tempting prices? Will the problem be solved by offering rubber goods at lower prices, or is it up to the chemist to find new applications of this remarkable hydrocarbon and once more balance supply and demand?

We are not concerned with most of the obvious reasons for the excess production, but it must be admitted that here as elsewhere the march of science is to a large extent responsible. The defeat of infectious fungoid disease, the intelligent use of manures, the selection of high yielding varieties, have resulted to-day and will result to an increasing extent in the future in very large yields of rubber to the acre, a factor which makes for cheapening of production provided that the output can be sold. We are usually told that the actual net cost of rubber is not the determining factor in the cost of rubber goods both because the proportion of actual rubber used is small and the cost of working it a material item. If this is really so, more serious attention must be given to using rubber in the form of latex instead of as coagulated crepe, in which some of the valuable physical properties of rubber are impaired or lost. The transport of latex as tapped with 33 per cent. of rubber is too costly and presents sundry problems, including that of its keeping.

Considerable progress has been achieved in concentrating the latex by means of spray drying, which is carried out so rapidly at a low temperature that the latex is not harmed. By the addition of a protective colloid—a soapy compound—before drying, the properties of the dried rubber, including its resolution, are not impaired in any way. The concentrated material, sometimes known as revertex, is easily transported and can be redissolved in water at the factory where it is to be used. It is said that the technique of handling the new revertex is only slowly being acquired; its potentialities are obviously great, especially as the rubber can be vulcanised before drying.

Evidently there is much conservatism to be overcome, for to the layman the availability of concentrated soluble rubber seems to open up new avenues for its exploitation. We are convinced advocates of the view that it is under-consumption and not over-production which is the malady of the rubber industry. Some day, somehow, somewhere, new uses will be discovered: the rubber using industry and its chemists have a great opportunity.

## The Calendar

| Nov. | | |
|---|---|---|
| 3 | Society of Chemical Industry (London Section): "Magnetic Susceptibility as a Means of Investigating Chemical Properties." Professor F. J. Spencer. "The Mechanism of the Formation of Cellulose Nitrate and Other Nitric Esters." Dr. R. C. Farmer. 8 p.m. | Burlington House, Piccadilly, London. |
| 3 | Institution of the Rubber Industry: "The Surface Tension of Rubber Solution." C. W. Shacklock. "Reinforcement." F. H. Cotton. 7.45 p.m. | Arts Theatre Club, Great Newport St., London. |
| 4 | Royal Institution of Great Britain: "New Aspects of Radioactivity." Dr. C. D. Ellis. 5.15 p.m. | 21, Albemarle Street, London. |
| 4 | Society of Chemical Industry (Nottingham Section): "Some Applications of Chemistry and Physics to the Examination of Hosiery Yarns." Dr. R. H. Pickard. 7.30 p.m. | University College, Nottingham. |
| 4 | Institute of Metals (N.E. Coast Section): "Gases in Metals." S. L. Archbutt. 7.30 p.m. | Armstrong College, Newcastle-on-Tyne. |
| 5 | Society of Public Analysts. 8 p.m. | Burlington House, Piccadilly, London. |
| 6 | Annual Chemical Dinner. 7.30 p.m. | Connaught Rooms, London. |
| 6 | Society of Dyers and Colourists (West Riding Section. | Bradford. |
| 6 | Society of Chemical Industry (Bristol Section): "Glass and Glass Making, with Reference to Special Glasses." R. F. Taylor. 7.30 p.m. | University, Bristol. |
| 7 | Institute of Chemistry (Manchester Section): "Problems of the Boundary State." Sir William Hardy. | College of Technology, Manchester. |
| 7 | Institute of Chemistry (South Wales Section): "Study of Crystals, with Special Reference to Chemistry." A. Stuart. 7.30 p.m. | Thomas's Café, High Street, Swansea. |

# The Future of the Dyestuffs Act

## Dr. Armstrong's Review of the Position

*In his address to the Society of Dyers and Colourists on Friday, October 24, Dr. E. F. Armstrong, an admittedly high authority on dyestuffs production, reviewed the position of the industry in view of the approaching termination of the period for which the Dyestuffs Act was originally passed. His conclusion was that this country had everything to lose by the discontinuance of the Act, and that there were no countervailing advantages to make the risk worth while.*

In view of the early termination of the Dyestuffs (Import Regulation) Act, 1920, in January, the address given by Dr. E. F. Armstrong, F.R.S., to the Society of Dyers and Colourists on Friday, October 24, came at an opportune moment, and was of the greatest public interest. Dr. Armstrong is particularly well qualified to speak on the subject of dyestuffs; for several years he was the managing director of the British Dyestuffs Corporation. His present position as chairman of the Association of British Chemical Manufacturers gives his pronouncements a special authority as representing the views of the British chemical industry on this important question.

### The Pre-War Position

Dr. Armstrong indicated some of the salient features of the pre-war development of dye manufacture, and showed how Germany, by her foresight and the painstaking application of scientific research, secured practically a world monopoly of an industry which owed its origin to the discoveries of British chemists. Thus the outbreak of war found us dependent on Germany for the proper training of our organic chemists and for practically all the numerous organic chemical products so necessary to modern civilisation such as dyestuffs, drugs, medicines, solvents, photographic materials, and other fine chemicals. Further, our great textile industries with their world-wide trade had allowed themselves to drift into a position in which they were dependent on the German dye industry, not only for the multitude of ever-changing colours which they use, but also for the knowledge as to how these dyes should be applied. They were happy spoon-fed children of the German dyemakers with no disturbing thoughts for the future.

### A Rude Awakening

British users had a rude awakening in 1914, the memory of which, however, appeared to have been forgotten in too many quarters. Their whole trade, running into hundreds of millions of pounds, was in jeopardy for lack of dyes, worth only a small fraction of that value. The usual resourcefulness and determination of the British nation when in a tight corner came to the rescue, but at what a price! Think of the task—to endeavour, under the stress of war, to overtake the painstaking investigations and experience of the Germans during the previous 50 years with only such limited information at our disposal as was revealed in patents carefully drawn so as to conceal the data vital for their success. No wonder that our dye industry had had many vicissitudes. The war work had to be of an *ad hoc* nature and lacked that sound basis without which no undertaking can be successfully developed.

### The Users' Position

Consequently, after the Armistice, a period of protection was required to allow the industry to lay down proper foundations. This was given by means of the Dyestuffs (Import Regulation) Act, 1920, which prohibited the importation of dyes into this country except under licence. It was generally admitted that in spite of the industrial and other difficulties which had had to be encountered during the past 10 years, the Act had largely fulfilled its main purpose, and the foundations of a British dye industry had been well and truly laid. The Dyestuffs Act was passed mainly at the instigation and with the help of the colour users in order that "never again" might they be at the mercy of a foreign country as they were in 1914. The success of the Act had been largely due to the co-operation of the users, who, in the early days, had admittedly to accept certain economic handicaps before the British maker could perfect his manufactures. Those burdens had now become negligible, as the users themselves admit. There was no doubt that if the effect of the whole period of the Act on the colour consuming industries could be summed up impartially, it would be found that the balance was much to the advantage of the colour users.

### The Act Justified by Results

Mr. James Morton, himself a large colour user, in his excellent paper on "Dyes and Textiles in Great Britain, 1930," had given striking facts and figures in support of this view. Since the users had not endeavoured to controvert any of his data or his arguments, it must be concluded that they could not dispute the statement that, on the whole, the Dyestuffs Act had been to their advantage, and had also enabled the dye industry, with its numerous ramifications, to lay sound foundations for future expansion and development.

Further, our schools of training and research in organic chemistry were now second to none, and the trained chemists they had provided had been of inestimable value in the development of every branch of organic chemistry, and of the numerous industries outside the purely chemical field which required the services of organic chemists. All this went to prove that great benefits had accrued to this country from the Act and that British industrialists had utilised its protection to the full.

### The Future

What of the future? Could the British dye industry now withstand unaided the full force of world competition or must a further period of protection be granted? To answer this, the world's dye position must be reviewed. Practically every country of importance had since the war endeavoured, in the interests of national security, to establish a dye industry of its own, invariably under the protection of tariff walls. The result to-day was that the world's capacity for dye production was about twice the world's consumption, a state of affairs which always led to vigorous competition and undercutting in the open markets. This competition was becoming intensified by the general industrial depression which was naturally reducing the consumption of dyes. Thus, to leave the British dye industry unprotected, especially in the present state of world trade, would be to invite the dumping of foreign dyes at uneconomic prices to the serious detriment of the industry. Progress would be impeded, development arrested, and the consummation of the work which it was the object of the Act to achieve would not be attained. There would also be a serious danger that part of the position which had been captured would be lost to our foreign competitors. Only our rivals would benefit by this.

### Risks to the Colour Users

The colour users, while they might secure temporary benefits from the low prices which would result from the throwing open of the British markets, would suffer in the long run from the reimposition of foreign monopolies. In view of the lessons of 1914 it would be folly on their part to countenance such a state of affairs. Though the possibility of another war might be remote, there was a greater and more insidious danger. As world competition in every line of industrial activity became intensified, as it certainly would do, those foreign monopolies might be used to assist the development of the colour consuming industries of their own country. This was not an unlikely state of affairs, as progress was made in the rationalisation of a country's industries, to enable them to secure an increasing share of the world's trade. There was much more than a hint of it before 1914.

The danger must not therefore be lightly dismissed. Facilities for research and training in organic chemistry would also be restricted as the outlets for trained men were diminished with repercussive effects on other industrial activities. Thus, there was everything to lose by the withdrawal of protection for this important key industry at this stage, and there were no countervailing advantages which would make the risk worth while. The dyemakers, therefore, pleaded in the interests of national prosperity and security for a continuance of the Act. They had offered certain concessions which would remove the last trace of economic handicap to the colour-

consuming industry. There should therefore be no objection on the part of those colour users who could take the long view.

### Have We Fought in Vain?

The present trend of industrial developments showed indisputably that a nation's prosperity would in future depend more and more on chemical science and its applications. No branch of chemical activity, least of all the organic side, could be allowed to languish if Great Britain was to maintain her position as an industrial power. Therefore, our organic chemical industry, of which dye manufacture was an important part, must be preserved. We were now at the parting of the ways, and if, owing to blind adherence to a free trade creed or party politics, a further period of protection was not assured, we might well ask ourselves—Have we fought in vain?

## Memorandum of the Institute

### Effect on Research and Education

*The following memorandum has been issued by the Institute of Chemistry, which, it will be seen, strongly supports the continuance of the Dyestuffs Act on the ground of its beneficial influence on chemical education and the progress of research.*

The Institute of Chemistry of Great Britain and Ireland, which now includes over 5,750 members, has for its main object the maintenance of a high standard of scientific education and professional training among British chemists. With this aim in view the Council of the Institute regards with grave apprehension the impending lapse of the Dyestuffs (Import Regulation) Act, which has now for ten years encouraged and safeguarded the growth of a virile national industry for the production in this country of synthetic dyes and the requisite intermediates.

In developing this highly technical industry to an extent unprecedented in Great Britain, our industrialists have enlisted the services of many British chemical students, thereby offering a new career to the scientifically trained *alumni* of our universities and technical colleges.

### Pre-War Conditions

In 1886, Professor Raphael Meldola, a past-president of the Institute, reviewed the foundation and scientific development of the coal-tar colour industry, and pointed out the national danger arising from the decline of the industry in this country. As the Institute is doing to-day, so Professor Meldola then pleaded for a proper recognition of the importance attaching to the teaching of applied science, and especially of organic chemistry. His warning, however, fell on deaf ears, and his suggestions were disregarded. The British dyestuffs industry remained severely restricted until 1915, when, amid the throes of a world war, British Dyes, Ltd., was established with Governmental assistance in order to make a belated attempt not only to restore the coal-tar colour industry to this country but to retain it permanently after the war.

### The Safeguarding Act

When hostilities ceased, it began to be revealed that the latter object could only be realised by safeguarding the renascent British industry from foreign competitors and, after some delay, the Dyestuffs (Import Regulation) Act became law on January 15, 1921. This statute proved to be the turning point in British dyemaking, inasmuch as the very meritorious advances made by our manufacturers under its protection, have gone a long way towards placing our organic chemical industries on an independent footing. But the time has been too brief to make good the shortcomings of 70 years, and there are still many problems to be solved before this industry can be regarded as safely established.

There was a moment of pessimism even in 1924, when it was feared that an agreement might be made between the Interessen Gemeinschaft—the syndicate of German colour manufacturers—and the British Dyestuffs Corporation. On that occasion, the Council of the Institute intervened to urge the Government of that day not to concur in this proposed arrangement. The Council now feels that the educational aspect of the dyestuffs industry is as important to-day as it was six years ago.

### Educational Aspect

It should be realised that the great German colour works of the Interessen Gemeinschaft are not merely commercial undertakings concerned solely with the manufacture of dyes and intermediates; they are industrial universities in the most liberal sense of the term.

They employ a large number of qualified chemists, who work under conditions as congenial to research as are the laboratories of their leading academic institutions. These chemists not only carry out researches on new intermediate coal-tar products and synthetic dyes, but they also investigate the scientific problems arising under the following headings:—

(1) Chemotherapy, bacteriology. The study of therapeutic agents, antiseptics and disinfectants.

(2) Photographic materials such as developers and sensitisers.

(3) Artificial resins of all descriptions.

(4) Synthesis of rubber and rubber substitutes.

(5) Production of fuel and motor spirit.

(6) High pressure chemistry in both inorganic and organic aspects.

(7) Artificial fertilisers of all kinds.

All these important sections of scientific research in applied inorganic and organic chemistry have arisen as side lines during the development of the great German colour industry, which has served as the focus of these activities.

A similar development of research in applied chemistry has been noticeable in Great Britain during the last ten years, and this growth has been undoubtedly fostered by the encouragement given to our chemical manufacturers by the Dyestuffs Act.

### Dyestuffs Act and Chemical Profession

The chemists who have entered the services of the British colour makers are thereby supplementing their academic training by practical experience of applied organic chemistry and are thus becoming available for the manifold opportunities now arising for the scientific study and industrial development of the natural resources of the British Empire. It is to the mutual benefit of the constituent nations that this exploitation should be carried out by our chemists. Too often in the past such exploitation has been left to the chemists of other countries. An abundant supply of skilled chemists and technologists, and the maintenance of adequate facilities for instruction and research, are vital to our national prosperity and security.

### Conclusions

1. The Dyestuffs Act has had a most beneficial effect in laying the foundation of a national industry for the manufacture of synthetic dyes and intermediates.

2. This important industrial development has had a favourable reaction on the development of our schools of chemistry, and on the growth of other industries dealing with fine chemicals.

3. The number of well-trained chemists in the country is now greater than in any preceding period, and these scientific workers are available for our vital national needs.

4. Since these highly desirable tendencies have arisen largely during the short period of the duration of the Act, the Council of the Institute respectfully urges that on National and Imperial grounds the Act should remain in operation on similar lines for a further period.

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### Fertiliser Consumption in Barbados

THE United Kingdom and Canada supplied the entire quantity of ammonium sulphate, 4,764 tons, imported into Barbados in 1929. Fertilisers are used for the growing of sugar cane, the principal crop of the island, and other varieties imported include approximately 175 tons of superphosphates from United Kingdom, potassium sulphate and potassium nitrate from France and Germany, and approximately 1,000 tons of organic fertilisers prepared from fish waste. This material reaches Barbados from England, but includes certain quantities originating in Germany and Norway, transhipped through British ports.

# The British Empire Exhibition at Buenos Aires

## Preliminary Notes on I.C.I. and Other Exhibits

*A striking display by Imperial Chemical Industries, Ltd., is to be among the exhibits at the British Empire Exhibition in Buenos Aires next spring, when, as was announced in our issue last week, Mr. John Benn will pay an official visit to the Exhibition, and will act as our editorial representative. Preliminary notes on some of the proposed exhibits are given below.*

ONE of the most comprehensive exhibits at the British Exhibition at Buenos Aires will be staged by Imperial Chemical Industries, Ltd., who are represented in the River Plate countries by a company known as Imperial Chemical Industries Sociedad Anonima Comercial é Industrial, with offices in Buenos Aires, and also by agents for certain products. The exhibit will, therefore, be shown in the name of the local company, though the arrangements have been largely undertaken from the London office. A scale model has been made, which is being shipped to the Argentine, so that those on the spot will see exactly what has been in the minds of those directing affairs from headquarters, and the model will be used by the contractors, Frederick Sage and Co., in building the Exhibition stand. From the outset, it was decided to frame the exhibit in such a way as to demonstrate how Imperial Chemical Industries has not only local connections in Argentina, but also connections throughout the world. An interesting feature will be provided by a large frosted-glass globe, which has the British Empire marked in red, and the location of the I.C.I. representatives and agents in blue, the whole globe being illuminated and made to revolve.

### Argentine Consumption of Chemicals

Chemicals are in the nature of things uninteresting as exhibits, but there are certain chemicals which are shipped to Argentina in large quantities to be bought by South American manufacturers for their own use—for example, soda ash used in the manufacture of soap, paper, glass, refined oils, matches, glycerine, and paint, and also for such purposes as water-softening, tanning, wool scouring, brewing, and so forth. The Argentine Company will exhibit, alongside the chemicals, specimens of local manufacture in which I.C.I. products have formed a part, and the Exhibition authorities are welcoming such exhibits as an indication at the Exhibition that British industry is helping the national industries.

Other I.C.I. products which will be found on the stand include sporting ammunition and powders; and commercial explosives handled by the South American agents of Explosives Industries, Ltd.; and an important feature of the exhibit will be a display from I.C.I. Metals, Ltd., who are manufacturers of non-ferrous metals of all kinds. Amal carburettors and motor accessories will also be shown. Architectural bronze for various purposes should find a market in the Argentine, and special lamp standards have been designed, from which the stand will be illuminated, the lettering of the firm's name has also been done in decorative brass, and even the brass nosing round the stand will form an "exhibit."

While Argentina is necessarily largely a leather producing country, efforts are being made to interest manufacturers in Rexine leather cloth, which is in many quarters no longer regarded as a substitute for leather, but as a material particularly suited for purposes for which leather itself would never be used. We understand that experiments have been made to cover railway coaches with fabric, just as motor cars are now fabric-covered. A large range of samples of British-made articles, for which Rexine has a use, are also shipped to the Exhibition. These include suitcases, attache cases, ladies' handbags, jewel cases, portable gramophones, wireless equipment, cameras, photo frames, etc.

### Legal Concessions

Important legal concessions just announced by the Argentine Government have received a warm welcome among intending exhibitors at Buenos Aires. For a period of six months from the opening date in March next, no duty will be charged on goods displayed and sold in the Exhibition enclosure, which will be treated as a bonded warehouse. In the same way, patents and trade marks will be specially protected. Under existing laws a trade mark belongs to the firm which first registers it, and piracy by unscrupulous persons has been a frequent cause of annoyance at previous exhibitions. The new concession is of incalculable value, and makes it possible for exhibitors to undertake advance propaganda on an adequate scale.

### Machinery and Metals

The machinery and iron and steel exports from this country to the principal South American markets are very extensive. It is satisfactory therefore to find that in the machinery section of the Exhibition it is proposed to show British plant actually in operation, not only turning out saleable goods, but producing power and light for use in the Exhibition buildings. A joint exhibit of machinery products is being arranged by the Birmingham branch of the National Union of Manufacturers. This enterprise will attract attention to the industries of the Midlands as a whole and should greatly benefit the individual firms which are taking part.

Chains of electrically welded steel are a speciality suited for pulley blocks, railway signals and boat tie chains. Motor non-skid chains for cars, trucks and farm tractors are other products for which a big demand is expected in the Argentine, where the scope for agricultural requirements of all kinds is enormous.

Modern methods of manufacture will be illustrated by certain firms, who will show the scientific instruments used in production processes side by side with the finished article. It is believed that such an addition to the exhibits will indicate how British firms are availing themselves of the best scientific assistance, both in the course of manufacture and in carrying out new investigations. We understand that the British Scientific Instruments Research Association is co-operating in this valuable method of display.

### Use of British Raw Materials

In connection with the growing use of British raw materials in Argentine industries, the Welsh Tin Plate Manufacturers' Association will present an important exhibit. Local box-making and chromo-printing on the tinplate used in this process are industries that show a steady expansion, as so many articles produced in Argentina must now be packed in types of containers that were unknown before the war. Biscuits are one instance, while hard sugar sweets and yerba maté are other products which are now packed for export on a large scale.

British motor cars and commercial vehicles are to form an important section of the Exhibition, and strenuous efforts are to be made to push the sales of British motor boats, for which, at the moment, there are unrivalled opportunities. The British Government exhibit, comprising the largest display of British aircraft yet shown overseas, will assist aeroplane manufacturers to capture this important market.

On one of the stands the complete manufacture of an aeroplane will be exhibited in all its stages, from the working up of the raw materials to the finishing touches on the completed machine. It is realised that an actual demonstration attracts the buyer more successfully than any other method, and the sales of aeroplanes should be greatly assisted by this particular enterprise.

### Electrical Industries' Display

The electrical industry will be represented at the Exhibition by the British Electrical and Allied Manufacturers' Association, who are organising a joint exhibit. The General Electric Company has also reserved a large stand and will show all types of equipment including radio apparatus. There are unmistakable signs that British-made radio apparatus will find an extensive market in South America. Last year the British radio trade exported apparatus and valves to the value of £41,947 to Argentina alone. This was an increase of £14,753 over the previous year. Our trade with Brazil totalled £11,136 during the same period, with Peru it was £17,364, and £27,117 with Chile, showing a total increase of £21,211 over the previous year's trading. In the opinion of leading manufacturers these radio figures are going to be completely dwarfed by future trade.

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# The Coke Oven Industry

## Marketing of By-Products

THE various factors, affecting conditions in the coke oven industry, were discussed by Mr. J. B. Deakin, in his presidential address to the Coke Oven Managers' Association at their annual meeting in London on Thursday, October 23. After a reference to the depression of trade in general, Mr. Deakin continued: In our own industry, we find that owing to the depression in the iron and steel trade, there is a poor and decreasing demand for our coke. The manufacture of one of our chief by-products, sulphate of ammonia, has almost ceased to be remunerative. The price of tar has slumped badly, due to a number of causes, the chief of which are: The depression of the briquette trade; the falling off of the American demand for our creosote; and the competition of road making and dressing preparations of foreign and colonial origin.

In spite of this gloomy outlook, there is another side to the picture. We have learned a good deal about coke during the last few years, and, even more important, I believe, our blast furnace friends are learning what they want. By better cleaning, crushing, and blending of coals, by the more uniform heating in modern ovens, and, by more careful sizing of the coke before charging into the blast furnaces, we shall, in the future, produce more iron per ton of coke than we have done in the past, and by doing so, we shall benefit the iron and steel industry particularly, and through them, the whole trade of the country.

### Iron and Steel Transition

The iron and steel industry of this country is now engaged in a gigantic task of reorganisation and rationalisation, and we are at the present time, in some measure, suffering from the loss in trade caused by this transition period. When the reorganisation has been completed, we shall undoubtedly be in a better position to meet foreign competition and to secure a larger share of the world's markets. Then there is the prospect of fiscal reform or protection—call it what you will. I have no desire to tread on the thin and somewhat muddy ice of political controversy, but it is in the air, and I feel that soon our industry, which has for so long suffered from the mistakes and blunders of ill-informed politicians, will actually benefit from constructional political action.

With regard to ammonia, so long as we have to purchase our sulphuric acid, or manufacture it from purchased sulphur, I see little or no prospect of our competing with synthetic nitrogen compounds. The only hope is that our chemists will perfect a simple and economic method of fixing ammonia with a sulphur radicle prepared directly from the sulphuretted hydrogen in the crude coke oven gas. The benzol position is more healthy and the future of this by-product is reasonably assured. The immediate outlook for tar is unsatisfactory, and disappointing, but by no means as hopeless as that of sulphate of ammonia.

### Disposal of Tar

It seems to me that we, in this country, can learn something about the wise disposal of our tar from what has happened in the United States. When the great steel companies of America began to produce tar in large quantities in their by-product coke ovens, the American tar distillers took the long view, and instead of competing for this new supply of tar, they encouraged the steel makers to use their production of tar as a fuel in the steel works. This arrangement worked satisfactorily until, so I am informed, a group of British tar distillers went over to the States, and persuaded the steel people there to put up tar distillation plants, with the inevitable result that the market was glutted with tar products, and prices fell. In this country, there is a limited, but still potentially large, outlet for our tar for road making and road dressing purposes.

To take the very greatest advantage of this potential market, several things are obviously necessary. Firstly, the road tar offered for sale must be of good and uniform quality, and, to the specification desired by the road authorities. Secondly, intelligent, intensive, and unceasing propaganda must be carried on to convince members of Parliament, members of local authorities, and the surveyors to these authorities, that British road tar is made from British coal by British labour, and is, in every way equal, and in some respects superior, to products made from crude petroleum or asphalt of foreign or colonial origin, which may, or may not be, partially manufactured in this country.

Of the tar produced by high temperature distillation of coal in this country, approximately 50 per cent. is produced in coke ovens, and 50 per cent. in gas works. Now, suppose by intelligent manufacture, propaganda, and salesmanship, the tar industry secures the big majority of the orders for road requirements, there will still be a surplus of tar in the country—probably a large surplus. Then individual firms, or groups of firms, will continue to compete keenly for the road orders, and prices will be kept below an economic level. It is to combat this situation that I make a suggestion, to which I ask you to give your earnest consideration. It will first of all be necessary to form a national association composed of all—or nearly all—the tar producers of the country, and here I would particularly emphasise the word "producers." This national association of tar producers would meet, and through its executive committee determine not only the selling price of road tar, but also the proportion of the crude tar which was to be converted into road tar. The remainder of the tar, after supplying the demands of the pitch and creosote market, should then be burnt as liquid fuel, either by the producers themselves, or by their customers.

### Price of Crude Tar

Crude tar to-day is, in many instances, realising little more than 1½d. per gallon, or 24s. per ton, and I suggest to you that *even* for steam raising, and taking crude tar on its calorific value alone, it is worth something more than this, dependent upon the local price of the coal it replaces. This is taking it at its *lowest* value, whereas, for many purposes, it could be used as a substitute for fuel oil, for example in furnaces in the metal trades, where its monetary value would be considerably greater.

Gas—our fourth main by-product—is the one which we most hopefully look to as a future source of revenue, but it must be admitted that many grave problems will have to be met and overcome before the full benefit can be derived from this source. The problems we have to face are not technical ones: of these we have no fear. They are rather commercial, legal, and even political. Already our friends in South Yorkshire are tackling the matter on a big scale, and whilst the ultimate details of their scheme have still to be decided, we of the Coke Ovens Managers' Association wish them every success.

# Chemistry House Scheme

## Inaugural Banquet at the Guildhall

IN a circular issued from Burlington House, Piccadilly, London, Messrs. C. McDermid and S. E. Carr, joint secretaries, state that the following societies and institutions have been incorporated as "The Association for the Promotion of Co-operation between Scientific and Technical Societies and Institutions within the British Empire": The Empire Council of Mining and Metallurgical Institutions, the Institution of Mining and Metallurgy, the Institution of Mining Engineers, the Institution of Petroleum Technologists, the Iron and Steel Institute, the Institute of Metals, the Institute of Fuel, the Chemical Society, the Society of Chemical Industry, the Institution of Chemical Engineers, and the Institution of the Rubber Industry.

The first meeting of the (*interim*) council of management was held on October 8, when it was decided that the Association shall be known by the short title of "The Association of Scientific and Technical Institutions." The registered address is Burlington House, Piccadilly, London, W.1.

The project will be inaugurated at a banquet, to be held at the Guildhall (by permission of the Corporation of the City of London), on Thursday, November 13, at 7.30 p.m., at which the Prince of Wales has consented to be present, and a specially representative and distinguished gathering is assured. The available seating accommodation is strictly limited, and members of the constituent institutions who desire to be present are requested to make application for tickets immediately. Arrangements will not be made for ladies to be present. The charge for the banquet is £2 2s. per head, inclusive of wines, etc.

Applications, accompanied by remittance, must reach the joint secretaries at the above address not later than first post on Tuesday, November 4, on which date tickets will be allocated by ballot.

## Atmospheric Pollution Research

### Measurement of Sulphur Impurities

THE work of the Atmospheric Pollution Research Committee during the year ended March 31, 1929, is summarised in the fifteenth report which was issued on Tuesday by the Department of Scientific and Industrial Research (H.M. Stationery Office, 3s. 6d.).

During the year, it is stated, arrangements were made for the Government Chemist to undertake an investigation into the problem of measuring sulphur impurities in the air, and considerable progress was made. A striking fact which emerged very early in the work was that in the place of experiment (Holborn), at all events, sulphur trioxide is not a normal constituent of the atmosphere; it appears only during fog. This result was somewhat unexpected, but later work appears to confirm it. It is hoped as a result of this investigation to produce a method which will be suitable for the routine determination of the amount of sulphur in the atmosphere, and trials of the apparatus proposed are now being made.

### Daylight Records

Further consideration was given during the year of report to the question of developing a simple means of obtaining daylight records. The difficulty in dealing with the measurement of daylight or ultra-violet light is that the proportion of light in different wave-lengths varies considerably on different days, and consequently a measurement of the amount in any one wave-length gives little information as to the total light or the quality of the light. Similarly, any means of measuring total light will fail to give information as to its quality. The discussions of the Committee, however, appeared to show that measurements on two different wave-lengths will give fairly complete information as to both the quality and the quantity of daylight. As a result, the National Physical Laboratory were asked during the year to develop a simple apparatus for measuring the total light received during a period of 24 hours in two definite wave-lengths. An experimental instrument has been designed which has been shown to provide for an intensity range ample to cover all times of the year. The next step is to make the modifications necessary to convert it into a suitable service instrument.

### Water in Fogs

Consideration was also given during the year to the question of the determination of water in fogs, and a request was addressed to the National Physical Laboratory to undertake investigations into the subject. Two suggested methods are being considered in the course of this work—namely, the Kohler method and the Owens method. In the former the fog-laden air is warmed until the moisture is all evaporated, and then the total moisture content is determined by means of a wet and dry bulb hygrometer. This method can naturally be operated as a continuous flow method, so that it takes an average of a fairly large sample of air.

The method devised by Dr. Owens is designed to measure the free water alone. A sample of the fog-laden air is enclosed in one vessel, and a sample of filtered air in another, the two vessels being connected to the two limbs of a manometer. Initially, there is no pressure difference, since both vessels are filled at atmospheric pressure. Communication with the atmosphere is then cut off, and the whole apparatus immersed in a water bath. The pressure increase in the vessel containing the foggy air may be considered as made up of two parts, one due to the warming of the air itself and of the water initially present as vapour, and the other due to the evaporation of the liquid particles. The former portion of the pressure increase is exactly compensated by the pressure increase in the vessel containing filtered air, so that the manometer reading depends only on the liquid initially present. In addition to these two methods it is proposed to consider the construction of an apparatus for determining the moisture content gravimetrically so as to have some standard of comparison. This investigation has been impeded by the unusual absence of fog since it was begun, and some further observations will be required before a report can be presented.

Professor Whytlaw-Gray, F.R.S., continued his investigation of the Owens jet dust counter with a view to establishing definitely the significance to be attached to the records obtained with the instrument. The work has not yet reached a stage at which a report can be published.

## The Late Lord Brotherton

### Public Tributes at Funeral

A REMARKABLE tribute from the many public bodies with which he had been connected was paid at the funeral service of Lord Brotherton, which took place at Leeds parish church on Friday, October 24. The interment followed at Lawnswood Cemetery. Overnight the body had rested in the church, where constant vigil was kept by watchers who included members of Leeds University and of the "Pals" Battalion, of which Lord Brotherton was hon. Colonel, and in the early morning a large number of his workpeople filed past the coffin.

At the commemoration service the greater part of the nave of the church was reserved for public representatives, and a civic procession was led by the Lord Mayor and Lady Mayoress (Mr. and Mrs. N. G. Morrison). The corporate body of the University also attended, led by the Vice-Chancellor, in token of Lord Brotherton's great munificence to their institution. In his address, the Vicar (Canon Thompson Elliott) recalled that Lord Brotherton had held the office of Lord Mayor, and was chosen by his fellow-citizens to receive the Freedom of Leeds. Having achieved a most unusual degree of success in business, he had a very deep sense of his responsibility to the community among whom he lived, and endeavoured with princely munificence to do good to his fellow-men.

The family mourners were:—Mr. John Brotherton and Mr. Fred Brotherton (brothers), Mr. and Mrs. Walter Beeson (sister), Mr. Charles Ratcliffe, Mr. E. Brotherton-Ratcliffe, Captain Bertram Ratcliffe, Mr. Clarence Beeson, Mr. Reginald Beeson, Mr. and Mrs. Howard Kyan, Mr. and Mrs. Joseph Kennedy, and Mr. and Mrs. Robert Young.

There was a very large number of floral tributes, the senders including:—The Leeds, Glasgow, Liverpool, Stourton, Manchester, Litherland, Birmingham and Wakefield branches of Brotherton and Co., Ltd.; former employees at Sunderland; head office staff; Mr. and Mrs. John Russell; directors of John Nicholson and Sons, Ltd., Hunslet; President, Council and Members of the Society of Chemical Industry; Yorkshire Tar Distillers, Ltd.; Mr. John F. Queeny (U.S.A.); Mr. H. W. Tash (Gilchrist, Tash and Wilson); Mr. and Mrs. Horace Muspratt (Liverpool); Mr. and Mrs. E. Brotherton-Ratcliffe; Leeds Corporation; the Leeds "Pals" Remembrance Association; the Leeds "Pals" (15th West Yorks. Regt.); the Duke and Duchess of Devonshire; the University of Leeds; old colleagues at United Alkali Co., Ltd.; Lord and Lady Hawke; Sir Max and Lady Muspratt; E. Newton and Co., Ltd., Birmingham; the Mayor, Aldermen and Citizens of Wakefield; staff of the British Alizarine Co., Ltd.; W. R. Roberts; Sir Henry and Lady Sutcliffe-Smith; Mr. and Mrs. John W. Saville; Charles Benn and Sons, Stourton; Imperial Chemical Industries, Ltd.; Lord and Lady Middleton.

### Society of Chemical Industry's Tribute

The Society of Chemical Industry, in an appreciation of Lord Brotherton, says: "In any list of those who have done really great things for the advancement and progress of the chemical industry during the last fifty years Lord Brotherton's name would undoubtedly be included in the first ten. He would not be regarded as a brilliant chemist, but he was a brilliant organiser and business man, and he devoted all his talents and energies to the furtherance of chemical science, in the value of which he possessed a passionate belief. In the process he amassed great wealth, but few men have used their money so admirably. The gifts for the furtherance of chemistry, science and education generally were on a princely scale, and it may truthfully be said that many of the wide developments of recent years in the chemical industry have been largely made possible by his munificent generosity."

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### New Zealand Output of Coal Tar

THE New Zealand production of coal tar from gasworks during the year ended March 31, 1930, amounted to 2,425,327 imperial gallons, valued at £52,977. These figures represent an 8 per cent. increase in quantity but a 25 per cent. decrease in value as compared with the 2,244,847 imperial gallons (valued at £70,355) produced during the corresponding preceding year (ending March 31, 1928).

## Chemistry as a School Subject

### Edinburgh Professor on Teaching Methods

SOME constructive criticism of methods of teaching chemistry was contained in the address given by Professor James Kendall, Professor of Chemistry in Edinburgh University, to an audience of teachers and university science students at Moray House Training College, Edinburgh, on Saturday last.

Professor Kendall, who took for the title of his address "Chemistry as a School Subject," said the primary object of a school education was not to make the exceptional boy or girl a specialist in any given subject—that was a later function of the University. The school should aim rather to give the average student that foundation of learning and of reasoning power which would equip him or her to become a good and useful citizen. Principal Tizard, of the Imperial College of Science and Technology, had recently commented upon the fact that graduates in chemistry with first-class honours were all too frequently unable to secure a position, or were unable to retain a good position after they had secured one, because of their inability to write decent English. It was pathetic when a person really possessed a knowledge of chemistry but lacked the ability to put it in words on paper. It was equally common, and equally pathetic, to encounter a chemistry student who could not handle the simplest problems in mathematics. While it would perhaps be going too far to say that a school training, even for one who proposed to make chemistry his life profession, should include no chemistry at all, yet this would undoubtedly be preferable to the present practice, which gave the student just enough chemistry to delude him into believing that his first-year University work was "old stuff" which he did not need to take seriously in order to pass, while leaving him inadequately equipped in other pre-requisites.

### A Harmful Tendency

Such chemistry as was taught at the school should not be splendidly isolated from other studies, as present examination schedules appeared to demand. The tendency of the beginner to keep his knowledge of different subjects in separate compartments of his brain, and never on any account to let the contents of one compartment mix with those of another, ought to be checked rather than encouraged. Current events might be utilised to fix the interest of the student upon almost any elementary topic. The disaster to the R101 might serve as an introduction to the chemistry of hydrogen and helium; the deciphering of the Andree diaries by Professor Svedberg to the chemistry of paper and ink. Just as small children started in on geography now, not by memorising continents and oceans, but by making maps of the schoolroom and of the immediate neighbourhood, so chemistry might well be begun by a discussion not of element and compounds, but of articles which entered into everyday life—such as soap, sugar, salt, artificial silk, coal gas, etc.—and of local chemical industries, for example, the shale oil industry in the Lothian district. Essays on topics such as chemistry in the home, or the chemistry of a motor car—which would include matters as diverse as the combustion of petrol, carbon monoxide, poisoning, anti-freeze mixtures, new steel alloys, lacquers, and rubber, would not only afford a practical means of approaching many important theoretical points in an interesting way, but would, at the same time, develop a facility in writing a connected story in logical form. The lives of great chemists—particularly local chemists, such as Joseph Black, in the case of Edinburgh students—might also provide many fascinating examples of the way in which scientific ideas are developed. The accumulation of isolated chemical facts was of minor value compared with the acquisition of a point of view which correlated chemistry with the world at large.

## British Beet Sugar Factories' Profits

THE balance sheets of the fifteen beet sugar factories in Great Britain were published on Wednesday as a White Paper, and all show substantial profits on last year's working. It is stated that the Research and Experimental Factory at Eynsham, run by the Sugar Beet and Crop Driers, Ltd., has among its assets the sum of £266,224 as the cost of taking out, maintaining and selling patents and patent rights, together with the amount spent on research and experimental work.

## Chemical Industry Club

### An Increase in Membership

THE committee, in its annual report, states that 1929–30, the eleventh year of the Chemical Industry Club's tenancy of its rooms in Whitehall Court, has been one of progress. Not only is the number of members increasing, but more members are making regular use of the Club. The figures of membership, at August 31, 1930, were as follows:—Town, 434; country, 233; overseas, 64—total 731, compared with a membership of 679 at August 31, 1929. The figure 731 does not coincide with that deduced from the subscriptions received as shown in the balance sheet. The discrepancy arises from the fact that there are some subscriptions outstanding.

The committee has been engaged during the year with two matters of importance, in addition to its usual work. The finance and house committee, under the chairmanship of Mr. W. H. Coleman, has, at the request of the executive committee, been re-drafting the rules. The work is one of importance, and the executive committee is not yet in a position to place the revised rules before the members.

The Club received from Professor J. F. Thorpe, President of the Chemical Society, a communication regarding the attempt now being made by "The Association for the Promotion of Co-operation between Scientific and Technical Socieites and Institutions within the British Empire," to associate certain scientific and technical organisations in a single building. The committee was asked if the Club desired to participate. The committee feels, however, that at present the scheme is not in a sufficiently advanced state to enable it to reach a final decision, but has informed Professor Thorpe that it will discuss the matter further next year. The committee wishes, however, to assure members that no action will be taken until they have been consulted. Professor W. R. E. Hodgkinson and Mr. A. Gordon Craig have been elected honorary members.

The monthly meetings held during the year were well attended, and the committee expressed its thanks to those who gave addresses: Dr. W. R. Ormandy, "Holiday Experiences on Land and Water"; Dr. H. E. Annett, "Wanderings of an agricultural chemist in India and New Zealand"; and Dr. H. Moore, "Waves and quanta." The committee reports with regret that it has received the resignation of the hon. treasurer, Mr. T. Miller-Jones, and thanks him for the care with which he has guided the Club's finances during the past seven years. Dr. Frank B. Dehn, the late chairman, also retires from the committee, upon which he has served continuously since the inception of the Club. The thanks of the committee are due to him for all the good work he has done.

The committee has nominated the following to serve as officers during the year 1930–31:—President, Professor Smithells, in succession to Lord Melchett; chairman, Mr. J. F. Ronca; hon. treasurer, Mr. F. A. Greene; hon. secretary, Mr. Arthur J. Chapman. The following members of the executive committee retire:—Messrs. R. L. Collett, G. S. W. Marlow, H. Moore and H. Talbot, all of whom, except Mr. H. Moore, offer themselves for re-election.

## New Laboratories at Manchester University

THE Woolley Laboratories for pharmaceutical chemistry and galenical pharmacy at Manchester University were declared open on Wednesday, October 22, by Mr. E. T. Neathercoat, a past president of the Pharmaceutical Society of Great Britain. Mr. A. H. Worthington, chairman of the Manchester University Council presided and explained that the laboratories had been equipped entirely by the Woolley family, at a cost of nearly £3,000, in memory of Mr. G. S. Woolley, Mr. Herman Woolley and Mr. E. J. Woolley.

Mr. Neathercoat, in his address, said he believed the present laboratories were the best pharmaceutical laboratories in the country. He urged the necessity of training students, or some of them, along the higher branches of pharmaceutical chemistry and some of the branches of analytical chemistry as well. Great changes had taken place since the war in the diagnosis of disease. A wide field had opened up in the direction of bacteriological and clinical analysis. He feared that in some directions British research, which once held the field, had fallen somewhat behind, and he wished that some Government encouragement might be given to work in this direction.

# From Week to Week

CHILEAN SHIPPING COMPANIES are reported to be combining in a request to the Government for preferential treatment in the shipping of nitrate.

THE BRITISH ASSOCIATION OF CHEMISTS is holding its thirteenth annual dinner at the Adelphi Hotel, Liverpool, on Saturday, November 22, and it will be preceded by the annual meeting to be held in the same hotel.

MR. ROBERT JOHNSTON, who was co-opted to the board of directors of British Tintex and Dye Products, Ltd., following the extraordinary general meeting of the company in July last, has been appointed chairman, in place of Mr. Vernon Dunhill.

THE INTERNATIONAL (CONTINENTAL) RAW STEEL CARTEL is to continue until the end of the year, and its existence after then is to be the subject of a conference to be held in Brussels this month. Production is to be restricted, and fines for over-production, suggested at the Liége conference, are to be reimposed.

STOKE-ON-TRENT CITY COUNCIL, at their meeting last week, unanimously decided to instruct the Town Clerk to take legal proceedings against the manufacturer of the sweets and the supplier of the arsenic in connection with the recent Potteries poisoned sweets scare in which a number of people were taken ill after eating sweets.

UNIVERSITY NEWS: *Manchester.*—Mr. S. M. Neale, M.Sc. (Liverpool), has been appointed Lecturer in Cellulose Chemistry. *Cambridge.*—Mr. H. H. Nicholson, M.A., of Selwyn College, has been appointed University Lecturer in Agricultural Chemistry for three years. *Bristol.*—Professor F. Francis, the Alfred Capper Pass Professor of Chemistry, owing to ill-health, has expressed his desire to relinquish the office of Pro-Vice-Chancellor.

FIFTY-ONE PER CENT. of the share capital in the German State Monopoly Company for the sale of petrol, which must contain 2½ per cent. of home-distilled spirit, is to be handed over to a group of private petrol companies, including German branches of British and American firms, as the result of an agreement concluded with the German Minister of Finance on Wednesday. The Reich is to retain 49 per cent. of the capital and the right to appoint the president of the board.

MR. PIERRE S. DU PONT, chairman of the Board of E. I. du Pont de Nemours and Co., has been declared the first recipient of the medal, awarded by the vote of the readers of *Chemical Markets*, New York, to the business man of the chemical industry who is judged to have made the most remarkable contribution to its advancement. He began business with the du Pont Co. as a chemist in 1890 and before he became its president in 1915 he had done notable work in the development of smokeless powders.

MR. CYRIL S. BAXTER, of Tower Street, York, an assistant master at Poppleton Road School, York, received an injury to his eye as the result of an explosion while he was giving a chemistry lesson at the school on Monday. Mr. A. Morrison, a student at St. John's College, York, who was assisting in the demonstration, was also injured. It appears that, by an oversight, a piece of sodium was placed in a bottle containing phosphorus. There was an explosion, and immediately the demonstration table and the floor beneath burst into flames. About 40 children in the class at once left the room and in three minutes the 700 children in the school had marched out into the grounds. The outbreak was quickly subdued by the school fire brigade and little material damage was done.

THE GROWTH of the world's whaling industry within the past ten years is shown in figures issued this week by the Committee for Whaling Statistics appointed by the Norwegian Government to conduct investigations on behalf of the International Council for the Study of the Sea. In 1919-20, the total world production of whale oil was 407,327 barrels, from a catch of 11,369 whales. The production for 1928-29 was 1,867,848 barrels of oil, from a catch of 27,566 whales. These figures show that, owing to improved methods, production has been quadrupled, while the catch of whales has been little more than doubled. Since 1919-20, the number of land stations has decreased from thirty-three to twenty-five, while the number of floating factory ships has risen from six to thirty.

MR. R. G. GILL has been appointed a director of Lovering China Clays, in place of Mr. E. J. Hancock, who has resigned.

FATAL ACCIDENTS in chemical works in the United Kingdom during September numbered five out of a total of 191 for all industries. Two cases of chrome ulceration were reported and 16 cases of aniline poisoning.

CHANGE OF ADDRESS.—Lewenz and Wilkinson, Ltd., engineers and merchants, have recently moved into larger offices at 74, Victoria Street, London, S.W.1. Their telephone numbers are now Victoria 1753 and 1754.

DR. E. F. ARMSTRONG, F.R.S., is giving a lecture, arranged by the Department of Economics and Commerce, at Hull University on November 17, his subject being "Changes Ahead: The Relation of the Chemist to Industry."

"NEW ASPECTS OF RADIOACTIVITY" will be the subject of two lectures to be delivered by Dr. C. D. Ellis, F.R.S., on November 4 and 11, as part of the series of afternoon lectures which have been arranged by the Royal Institution during November and December.

UNEMPLOYED PERSONS in the chemical industry of Great Britain and Northern Ireland on September 22 last numbered 14,695, or 13·9 per cent. of the total number of insured persons in the industry. This is an increase of 1·6 per cent. during the month and an increase of 7·7 per cent. over September, 1929.

THE CLEAN COAL CO., LTD., has received an order from Newton, Chambers and Co., Ltd., of Sheffield, for a complete coal cleaning plant operating under the C.C. Patent System. This plant will supply clean coal to the battery of modern coke ovens recently erected by Thorncliffe Coal Distillation, Ltd., at Smithy Wood, South Yorkshire.

RECENT WILLS include: Mr. William Albert Bankier, London, chairman of the Attock Oil Co. and the East Indian Coal Co. (net personalty £148,404), £166,550. Dr. William Brown Davidson, of Warkworth House, Tynemouth, Northumberland, consulting chemist, late chief chemical engineer to British Dyes, Ltd., Huddersfield (net personalty £3,952), £4,934.

JUDGMENT WAS RESERVED in the Court of Appeal, London, on Thursday, October 23, in the appeal brought by Mr. E. H. Bell and Mr. W. E. Snelling, formerly chairman and vice-chairman of the Niger Co., against the judgment of Mr. Justice Wright ordering them to repay £30,000 and £20,000 which they received respectively as compensation for loss of office on the amalgamation with Lever Brothers, Ltd.

A PETITION TO WIND UP the British Sulphides Smelting Co., Ltd., was heard on Monday in the Chancery Division before Mr. Justice Maugham. Counsel stated that the judgment on which the petition was based had been set aside, and his clients had agreed to take an order dismissing the petition with costs. There had been a great deal of dispute as to the attitude the directors had taken. His Lordship dismissed the petition with costs.

MR. EDWIN THOMPSON, a vice-president of the Society of Chemical Industry and governing director of Thompson and Capper Wholesale, Ltd., which specialises in the manufacture of pharmaceutical preparations and the manufacture of chemical and pharmaceutical machinery, has been selected as the next Lord Mayor of Liverpool. He did considerable work as honorary secretary when the British Association visited Liverpool in 1923 and in the following year he was chairman of the Liverpool section of the Society of Chemical Industry. He is also managing director of United Photographers, Ltd.

THE ANNUAL CHEMICAL DINNER, to be followed by a dance, will be held on Thursday next at the Connaught Rooms, Great Queen Street, London. Sir Arthur Duckham will preside, and members of the following societies and institutions are invited to participate:—The Chemical Society, Institute of Chemistry, Society of Chemical Industry, Society of Public Analysts, Faraday Society, Biochemical Society, Society of Dyers and Colourists, Institution of Chemical Engineers, Institution of Petroleum Technologists, Oil and Colour Chemists' Association, Association of British Chemical Manufacturers, British Association of Chemists, and Chemical Industry Club.

### Obituary

MR. W. H. SAUNDERS, chairman of Ayrton, Saunders and Co., Ltd., manufacturing chemists, of Liverpool, and a Fellow of the Chemical Society, in Rangoon, aged 79.

# Patent Literature

*The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.*

### Abstracts of Accepted Specifications

334,166. Dye Intermediates. H. A. E. Drescher, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth. Application date, February 21, 1929.

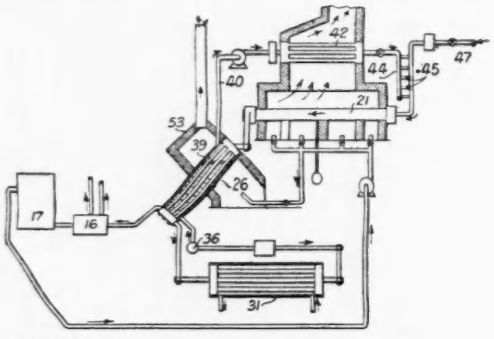
The urea of $3^1$-amino-$4^1$-chlor-2-benzoyl-benzoic acid is obtained by the action of phosgene on the acid in caustic soda solution, and is treated with concentrated sulphuric acid, cooled, and diluted to separate the 1-amino-2-chlor- and 2-amino-3-chlor-anthraquinones which are obtained.

334,169. Separating Soluble Substances. Imperial Chemical Industries, Millbank, London, and H. E. Cocksedge, Winnington Hall, Northwich, Cheshire. Application date, March 14, 1929.

Soluble substances are separated by simultaneous crystallisation in which the size of the particles is controlled by seeding, or by adding supersaturated solutions, or colloids such as gelatine. The mixture of crystals is then separated by a single grading by sieving or by elutriation. Examples are given of the separation of sodium nitrate and potassium nitrate, and of sodium carbonate and sodium chloride.

334,178. Unsaturated Hydrocarbons. R. G. Wulff, 131, South Manhattan Place, Los Angeles, U.S.A. Application date, February 25, 1929.

These products are obtained from ethane, casing-head gas, gas oil, petroleum fractions, carburetted natural gas, ethylene




334,178

and higher olefines, naphthenes, benzene or toluene. These are heated under a partial pressure of less than 1 atmosphere and temperature of above 815° C. for a short time in a non-ferrous reaction vessel in the absence of oxygen, the reaction products being rapidly cooled. The gas may be at reduced pressure, or may be mixed with a diluent and treated at atmospheric pressure. The reaction vessel may be a carborundum tube containing refractories, and the time of the reaction may be 0·002–5 seconds.

Oil vapour passed through pipe 47 and steam passed through pipes 44, 45 are mixed and passed through a cracking tube 21 from which the products pass to a condenser 26, which serves as a steam generator. Cooling water is supplied to the condenser by pump 36 and steam generation is completed in a heater 53 and passes through superheater 42 to the mixing point. The gaseous reaction products pass through separator 16 for acetylene, etc., and the residual hydrogen and methane pass to a holder 17 from which they may be supplied as fuel for the cracking operation or steam generation. The water condensed from the reaction products passes to a cooler 31 and is returned to the condenser.

335,181. Liquid Fuel. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 27, 1929. Addition to 226,731 (see The Chemical Age, Vol. XII, p. 115) and 252,019.

A motor spirit consists of gasolene, more than 0·2 gram per gallon of iron carbonyl, and an aromatic amine containing at least one alkyl radicle, *e.g.*, toluidine, monomethyl- and monoethyl-aniline, or N-methyl xylidine. Halogen compounds or organic compounds of metals of the kind increasing the critical compression ratio may also be added. Examples are given.

334,184. Synthetic Rubber. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 25, 1929.

The polymerisation of diolefines such as butadiene, in the presence of alkali or alkaline earth metals, commences quickly and proceeds uniformly if a cyclic diether such as dioxane or its derivatives is added. Solvents or diluents may be present.

334,189. Organic Oxygen Compounds. British Celanese, Ltd., 22, Hanover Square, London, S. J. Green and R. Handley, of British Celanese, Spondon, near Derby. Application date, May 27, 1929.

Oxygenated organic compounds are obtained by circulating mixtures of carbon monoxide and vapours of aliphatic alcohols, esters, or ethers, with or without hydrogen, over heated catalysts such as phosphoric acid. Paraffin hydrocarbons are removed from the reaction products by means of absorbent charcoal, active carbon or silica gel. In an example, a mixture of carbon monoxide and vapour of methyl alcohol or aqueous methyl alcohol is passed over phosphoric acid and the reaction products passed through a condenser. The uncondensed gases are then passed through towers containing active carbon or silica gel and returned to the circulating pump. Acetic acid is obtained.

334,190. Carbon. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. May 27, 1929.

Carbon monoxide is decomposed by metals of the 8th group and the carbon obtained is freed from carbonyl-forming metals or carbides by treating with hydrogen or inert gas at 400°–500° C., or in a weakly oxidising gas at 200°–400° C., and then treating with carbon monoxide at 50°–210° C. under pressure.

334,193. Amines and Heterocyclic Compounds. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 23, 1929.

Acetylene or its homologues, or aliphatic aldehydes, mixed with ammonia and/or amines and steam, are passed at 250°–500° C. over a condensation catalyst consisting of compounds of aluminium or metals, other than arsenic, of groups 2–7, and having a specific gravity above 4·4. The products are mixed with hydrogen and passed at 180–250° C. over hydrogenating catalysts such as metals of the iron group, copper or platinum. Alternatively, the condensation and hydrogenation may be effected simultaneously.

In an example, a mixture of acetylene, ammonia, and hydrogen, is passed at 350° C. over a catalyst of zinc oxide and thorium oxide on silica gel, and then at 150° C. over finely divided nickel on silica gel, to obtain piperidine and monoethylamine. Other examples include the treatment of aniline, acetylene, and hydrogen to obtain tetrahydroquinoline; acetylene, hydrogen, methane and nitrogen (obtained by treating a mixture of methane and hydrogen in an electric arc) mixed with ammonia to obtain ethylamine and aceto nitrile. Other examples employing various catalysts are given.

334,203. Cyclic Hydrocarbons. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 23, 1929.

Acetylene or a homologue is passed over a heated condensation catalyst and the products, mixed with hydrogen, are passed over hydrogenating catalysts to obtain cyclic hydrocarbons. The catalysts and the conditions of the reaction are as in Specification No. 334,195 above. In an example, a mixture of acetylene and hydrogen is passed over zinc chloride and silica gel at 450° C. and then over finely divided nickel at 200° C. The condensed product contains hydrogenated benzene.

334,207. ACETIC ACID. British Celanese, Ltd., 22, Hanover Square, London. S. J. Green and R. Handley, of British Celanese, Spondon, near Derby. Application date, May 27, 1929.

Acetic acid is obtained by the action of heat on a mixture of formaldehyde vapour with carbon monoxide. The temperature may be 200°–450° C. and pressure 100 atmospheres. The catalysts described in Specification No. 283,989 (see THE CHEMICAL AGE, Vol. XVIII, p. 203), *e.g.*, phosphoric acid with a copper promoter may be used. Details of the process are given.

334,217. 2 : 4 : 6-TRIBROMANILINE AND ITS ACIDYL DERIVATIVES. British Celanese, Ltd., and B. E. M. Miller, 22, Hanover Square, London. Application date, May 29, 1929.

Crude 2 : 4 : 6-tribromaniline is purified by sublimation at 160°–165° C. and by treatment with acetylchloride or acetic anhydride, acidyl-2 : 4 : 6-tribromanilides are obtained. Tribrom-diacetanilide produces no discoloration in compositions containing cellulose acetate, and does not freeze out at temperatures below 0° C.

334,223. ALCOHOLS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 23, 1929.

Acetylene or mixtures with its homologues, and steam are passed over condensation catalysts consisting of compounds of aluminium or metals, except arsenic having a specific gravity above 4·4, and of groups 2–7 of the periodic system. The products are mixed with hydrogen and passed over hydrogenating catalysts. The condensation is conducted at 253°-500° C. and the hydrogenation at a lower temperature. In an example, ethyl alcohol is obtained by passing acetylene and steam over zinc oxide on silica gel, and passing the products over finely divided nickel.

334,228. ABSORBING PROPYLENE IN ACIDS. J. W. Woolcock, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Ltd., Millbank, London. Application date, April 30, 1929.

Isopropyl sulphate and acetate are formed by absorbing propylene in mixtures of acetic acid with sulphuric acid or acid isopropyl sulphate at a temperature below 60° C. The isopropyl acetate may be distilled or may be separated as a top layer by adding water, and the sulphuric esters are converted into isopropyl alcohol by hydrolysis. Propylene may be separated from olefines by absorbing the olefines in cooled 80 per cent. sulphuric acid and then absorbing the propylene as above. Ethylene is substantially unabsorbed.

334,240. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 30, 1929.

Vat dyestuffs are obtained by condensing Bz-3 : 5-dichloro-4-chloranthraquinone-2 : 1 (N)-acridone with amides of aromatic carboxylic or sulphonic acids in a diluting or suspending medium and in presence of acid-fixing agents and a copper catalyst. The products may be saponified. Bz-3 : 5-dichloro-4-chloro-anthraquinone-2 : 1 (N)-acridone is obtained by treating the anthraquinone -2 : 1 (N)-acridone suspended in nitrobenzene with sulphuryl chloride in presence of iodine chloride. In examples the above acridone is condensed with *p*-toluene-sulphonamide or benzamide and the product saponified.

334,241. CRACKING HYDROCARBONS. H. D. Elkington, London. From Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij, 30, Carel van Bylandtlaan, The Hague. Application date, May 30, 1929.

Hydrocarbons are cracked by passing through a fused mixture of equimolecular parts of barium and calcium chlorides melting about 500° C. Butane is passed through this mixture at 750° C. to obtain a gas containing 18·5 per cent. of propylene and 18·7 per cent. of ethylene. Other similar salt mixtures may be used, also molten tellurium, which has a catalytic action.

334,251. CATALYSTS. British Celanese, Ltd., 22, Hanover Square, London, and W. Baker and E. B. Thomas, of British Celanese, Spondon, near Derby. Application date, May 31, 1929.

In the synthesis of methanol, etc., the catalyst is reactivated by treating with gases containing at least 75 per cent. of hydrogen at a temperature of 370° C. and a pressure of 100 atmospheres. The reactivation may be carried out by substituting hydrogen after the synthesis, the other conditions being unaltered.

334,260-1. BENZYL CHLORIDE AND BENZALDEHYDE. Imperial Chemical Industries, Ltd., Millbank, London, N. Bennett, St. Bede's Terrace, Widnes, Lancs, H. Dodd, Temple Cottage, Glazebrook, near Manchester, W. C. Sprent, 13, Eastern Drive, Cressington, Liverpool, and F. Holt, 146, Greenway Road, Runcorn, Cheshire. Application date, June 1, 1929.

334,260. Crude mixtures containing benzol alcohol, recovered from the manufacture of benzyl cellulose, are treated with an excess of anhydrous sodium carbonate and filtered, and then with hydrochloric acid at 80°-90° C. The product is distilled to obtain benzyl chloride.

334,261. The crude mixture containing benzyl alcohol referred to in 334,260 above is treated with chlorine to obtain benzyl chloride and benzaldehyde, or the method may be applied to the distillation residue after the removal of benzyl chloride in 334,260 above.

334,268. CATALYSTS. Imperial Chemical Industries, Ltd., Millbank, London, and J. A. Weil, 115, Withington Road, Whalley Range, Manchester. Application date, June 1, 1929.

Catalysts for the oxidation of sulphur dioxide consist of a mixture of a vanadium compound such as alkali vanadate or vanadite, vanadyl sulphate or ammonium vanadyl oxalate, with a silicious diluent and a silicious hydrogel. Alternatively, a silicious material, of which part is in the form of a wet hydrogel, may be used.

334,364. SOLID ALKALI HYPOCHLORITES. V. Szidon, 44, Rue d'Amsterdam, Paris. Application date, August 14, 1929.

Alkali hypochlorites for bleaching are obtained by adding to hypochlorite solutions alkali metal salts of saturated fatty acids of low molecular weight, *e.g.*, sodium laurate or caprylate.

334,388. ALKALI ETHYLATES. Dr. A. Wacker Ges. für Elektrochemische Industries Ges., 20, Prinzregentenstrasse, Munich, Germany. International Convention date, November 24, 1928.

Alkali hydroxide is treated with alcohol at a high temperature, by suspending it in paraffin heated to 200° C., or by the application of pressure. The water formed in the reaction is distilled off as aqueous alcohol. Benzene or its homologues or hexane, which are capable of forming an azeotropic mixture with water and alcohol, may also be added.

334,427. ACETALDEHYDE. G. F. Horsley, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Ltd., Millbank, London. Application date, October 21, 1929.

Acetaldehyde is produced by the reaction at 300°-350° C. of acetylene and steam in the presence of a catalyst consisting of zinc oxide activated with 1 per cent. of a molybdate or molybdic acid, obtained by treating zinc oxide with a dilute solution of a molybdate or molybdic acid, filtering, drying, and heating. Water vapour is first condensed and removed, and the gases then washed with cold water to extract the aldehyde.

334,449. BISMUTH SALTS OF ORGANIC ARSONIC ACIDS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 22, 1928.

Alkali salts of organic arsonic acids are reacted with equimolecular parts of a solution of a bismuth salt other than bismuthyl-potassium-sodium tartrate to obtain alkali-insoluble basic bismuth salts. Acids employed include 3-acetylamino-4-hydroxybenzene-1-arsonic acid and para-acetylamino-benzene arsonic acid.

334,466. CATALYSTS. Bamag-Meguin Akt.-Ges., 10, Reuchlinstrasse, Berlin. International Convention date, February 8, 1929.

A catalyst for the oxidation of ammonia consists of wire netting of rhodium or a platinum-rhodium alloy, containing some wires of pure platinum.

NOTE.—Abstracts of the following specifications which are now accepted appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—311,226 (Chemieverfahren Ges.), relating to alkali sulphates, see Vol. XXI, p. 34; 314,803 (Newport Co.), relating to indanthrone dyestuffs, see Vol. XXI, p. 223; 314,903 (Soc. of Chemical Industry in Basle), relating to dyestuffs, see Vol. XXI, p. 224; 314,987 (R. J. Frost), relating to electrolytic production of white lead, see Vol. XXI, p. 224; 315,826-7-8-9 (A. M. Byers), relating to wrought iron, see Vol. XXI, p. 37 (Metallurgical Section); 318,488 (I.G.

Farbenindustrie Akt.-Ges.), relating to optically active 1-phenyl-2-methyl-aralkylamino-propanols-1 and 1-phenyl-2-methylamino-propanol-1, see Vol. XXI, p. 479.

### Specifications Accepted with Date of Application

309,446. Destructive hydrogenation of coal extracts. A. Pott and H. Broche. April 10, 1928.

309,594. Smelting of ores. Electro Metallurgical Co. April 13, 1928.

310,972. Purifying sulphur and obtaining carbon disulphide and sulphur oxides, Apparatus for. G. Jakova-Merturi. May 4, 1928.

317,296. Ether derivatives of amino-benzoic acid alkamine esters, Process for the manufacture of. Schering-Kahlbaum Akt.-Ges. August 10, 1928.

318,255. Cellulose derivatives, Manufacture of. Soc. of Chemical Industry in Basle. August 31, 1928.

319,249. Condensation products, Manufacture of. Soc. of Chemical Industry in Basle. September 18, 1928.

336,206. Ammonium carbamate and the carbamates and carbonates of the alkali metals and of magnesium, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 1, 1929.

336,234. Conversion of olefines into other hydrocarbons. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) May 4, 1929.

336,237. Neutral polymerisation products from vinyl esters, Manufacture of. I.G. Farbenindustrie Akt.-Ges. November 16, 1928.

336,251. Anhydrous sodium sulphide, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) June 10, 1929.

336,261. Carbon black, acetylene, and hydrogen, Manufacture of J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 10, 1929.

336,269. Cracking of liquid hydrocarbons. O. D. Lucas. July 10, 1929.

336,276. Esters, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 4, 1929.

336,319. Purification of gases by washing with organic liquids. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 20, 1929.

336,339. Polymerisation products of diolefines, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) August 2, 1929.

336,350. Azo dyestuffs. Imperial Chemical Industries, Ltd., and R. Brightman. August 15, 1929.

336,380. Converting hydrocarbon oils. Petroleum Conversion Corporation. October 6, 1928.

336,394. Arylamino-phenol-carboxylic acids, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) September 27, 1929.

336,412. 1-phenyl-2-methylamino-1-propanol, Manufacture of. Knoll Akt.-Ges. Chemische Fabriken and W. Klavehn. July 30, 1929.

336,425. Purification of gases containing sulphuretted hydrogen and ammonia. F. Bonnemann. October 12, 1929.

336,428. Arylides of aromatic hydroxy-carboxylic acids. Manufacture of. W. W. Groves. (*I.G. Farbenindustrie Akt.-Ges.*) October 14, 1929.

336,454. *n*-Monoacylated-diamino-arseno-benzenes, Manufacture of. I.G. Farbenindustrie Akt.-Ges. November 1, 1928.

336,498. Refining magnesium and alloys thereof. I.G. Farben industrie Akt.-Ges. January 2, 1929.

336,500. Calcining seaweed, Apparatus for. J. C. Morrison. December 16, 1929.

336,512. Mono-alkyl xylene sulphonamides, Preparation of. Imperial Chemical Industries, Ltd., N. Bennett, H. Dodd, and W. C. Sprent. January 17, 1930.

336,516. Preparing acetylides. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler. February 7, 1929.

336,495. Vat-dyestuffs of the anthanthrone series, Manufacture of. L. Cassella and Co., Ges. December 10, 1928. Addition to 260,998.

### Applications for Patents

*[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]*

Aische, M. I. Preparation of synthetic cyanides. 31,658. October 22.

Caro, N., and Frank, A. R. Production of calcium carbamate. 32,012. October 24. (Germany, February 8, 1929.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of halogenated amino-arylthiazole compounds. 31,564. October 21. (January 22.)

—— Manufacture of anthraquinone dyestuffs. 32,057. October 24. (September 30, 1929.)

Carpmael, A., and Schering-Kahlbaum Akt.-Ges. Catalytic conversion of nopinene into pinene. 32,064. October 24.

Carter, P. G., Imperial Chemical Industries, Ltd., Shaw, C., and Thomson, R. F. Production of anthracene derivatives. 31,642. October 21.

Distillers Co., Ltd., Joshua, W. P., and Stanley, H. M. Manufacture of alcohol and ether. 31,649. October 21.

Goldsbrough, R. E. Production of benzines, etc., from coal tars, etc. 31,492. October 21.

Groves, W. W., and I. G. Farbenindustrie Akt.-Ges. Manufacture of halogenalkylenated 1-aryl-5-pyrazolone derivatives. 31,440. October 20.

—— Obtaining urea, etc., derivatives of the aromatic heterocylic, etc., series. 31,889. October 23.

—— Manufacture or organic mercury compounds. 31,892. October 23.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of hydrocarbons. 32,026. October 24.

—— Recovery of molybdenum. 32,027. October 24.

—— Conversion of hydrocarbons at higher temperatures. 32,028. October 24.

—— Manufacture of saturated amines. 32,029. October 24.

I.G. Farbenindustrie Akt.-Ges. Making artificial silk. 31,436. October 20. (Germany, October 18, 1929.)

—— Process of photographic printing. 31,437. October 20. (Germany, October 18, 1929.)

—— Manufacture of dyestuffs. 31,438. October 20. (Germany, October 19, 1929.)

—— Manufacture of anhydrides of aliphatic halogen acids. 31,439. October 20. (Germany, October 19, 1929.)

—— Manufacture of barium hydroxide. 31,567. October 21. (Germany, October 21, 1929.)

—— Killing or eliminating flies. 31,736. October 22. (Germany October 28, 1929.)

—— Manufacture of wetting, etc., agents. 31,743. October 22. (April 27, 1929.)

—— Protective paper strips for film rolls for daylight loading. 31,890. October 23. (Germany, October 25, 1929.)

—— Manufacture of photographic sensitive materials. 31,891. October 23. (Germany, October 23, 1929.)

—— Photographic film. 32,019. October 24. (Germany, November 5, 1929.)

—— Manufacture of barium hydroxide. 32,128. October 25.

Imperial Chemical Industries, Ltd. Extraction of gold from ores, etc. 31,473. October 20.

—— Carrying out endothermic gas reactions. 31,475. October 20.

—— Artificial resinous substances. 31,643. October 21.

Imperial Chemical Industries, Ltd., Smith, W., Thomson, R. F., and Thornley, S. Dyestuffs, etc. 31,645. October 21.

—— Devices for sampling powders. 31,646. October 21.

—— Internal-combustion engines, etc. 31,713. October 22.

—— Synthetic production of higher alcohols. 31,867. October 23. (United States, October 23, 1929.)

—— Welding rods. 32,042. October 24.

—— Intermediate compounds and dyestuffs therefrom. 32,076. October 25.

Semple, G. C., Thomson, R. F., and Shaw, C. Production of anthracene derivatives. 31,644. October 21.

## The China Clay Trade

### A Revival Anticipated

A REVIEW of the china clay trade for the first nine months of the present year, shows that there has been a considerable decline in activity, which may represent nearly £200,000, but for the last two months shipping has improved and there is every probability of a substantial recovery before the end of the year.

The American market has improved, though still a long way from its normal consumption. September exports to the United States were 20,789 tons, compared with 13,106 tons in August and 6,042 tons in July. The fluctuation of the Continental markets is also illustrated in the returns of several of the industry's principal buyers.

For example, Belgium, the premier consumer of Cornish clay, imported 8,388 tons in August, 4,119 tons in July, and last month trade declined to 3,150 tons; Germany took 3,120 tons last month, 4,427 tons in August, against 1,333 tons in July; France, 3,277 tons in September, 2,984 tons in August, and 2,723 tons in July.

The Indian demand is still very small owing to the prevailing unrest, less than 500 tons being exported there last month, but hopes are entertained for an early recovery.

From a reliable source it is learnt that medium-priced British chinaware in the United States is again experiencing a fair demand, and high class china for the moment is being ignored, but the American pottery market generally is looking decidedly better.

# Weekly Prices of British Chemical Products

*The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.*

## General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID CHROMIC.—1s. 0⅝d. per lb. d/d U.K.

ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA (ANHYDROUS).—Spot, 11d. per lb., d/d in cylinders.

AMMONIUM BICHROMATE.—8d. per lb. d/d U.K.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER, 35/37%.—Spot, £7 10s. per ton d/d station in casks, special terms for contracts.

BORAX, COMMERCIAL.—Crystals, £13 10s. per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags. carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards).

CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d in drums.

CHROMIUM OXIDE.—9½d. and 10d. per lb. according to quantity d/d U.K.

CHROMETAN.—Crystals, 3½d. per lb. Liquor, £18 10s. per ton d/d U.K.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 7d. to 1s. 11d. per gall. pyridinised industrial, 1s. 9d. to 2s. 1d. per gall.; mineralised, 2s. 8d. to 2s. 11d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4½d. per lb. nett d/d U.K., discount according to quantity; ground ½d. per lb. extra.

POTASSIUM CHLORATE.—3¾d. per lb., ex-wharf, London, in cwt. kegs.

POTASSIUM CHROMATE.—8d. per lb. d/d U.K.

SALAMMONIAC.—Firsts lump, spot, £42 10s. per ton d/d station in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE, UNGROUND.—Spot, £3 7s. 6d. per ton d/d station in bulk.

SODA ASH, 58° E.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.

SODA CAUSTIC, SOLID, 76/77°E.—Spot, £14 10s. per ton, d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.

SODIUM BICHROMATE CRYSTALS.—3¾d. per lb. nett d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.b. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM CHROMATE.—3¼d. per lb. d/d U.K.

SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d address in bags.

SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton d/d station in drums. Crystals—Spot, £7 10s. per ton d/d station in casks.

SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

## Coal Tar Products

ACID CARBOLIC CRYSTALS.—6d. to 7½d. per lb. Crude 60's 1s. 4½d. to 2s. per gall. August/December.

ACID CRESYLIC 99/100.—2s. 2d. to 2s. 3d. per gall. B.P., 5s. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Refined, 2s. 7d. to 2s. 10d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 1s. 11d. to 2s. Dark, 1s. 6d. to 1s. 7d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5¼d. per gall. 1100, 5¼d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained (Prices only nominal).

BENZOLE.—Prices at works: Crude, 8d. to 9d. per gall.; Standard Motor, 1s. 3½d. to 1s. 4½d. per gall.; 90%, 1s. 5d. to 1s. 6d. per gall.; Pure, 1s. 8d. to 1s. 9d. per gall.

TOLUOLE.—90%, 1s. 8d. to 1s. 10d. per gall. Pure, 1s. 9½d. to 2s. 1d. per gall.

XYLOL.—1s. 4½d. to 1s. 10d. per gall. Pure, 1s. 7½d. to 2s. 1d. per gall.

CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, for Export, 6d. to 6⅜d. per gall. Home, 4d. per gall. d/d. Middle oil, 4½d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 1½d. to 1¾d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 8¾d. per gall. Solvent, 90/160, 1s. 2¼d. to 1s. 3d. per gall. Solvent, 95/160, 1s. 3½d. to 1s. 5d. per gall. Solvent 90/190, 11d. to 1s. 2d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £3 to £5 per ton. Whizzed, £4 to £5 per ton. Hot-pressed, £8 per ton.

NAPHTHALENE.—Crystals, £10 per ton. Purified Crystals, £14 10s. per ton. Flaked, £11 per ton.

PITCH.—Medium soft, 46s. to 47s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 6d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy prices only nominal.

## Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID GAMMA.—Spot, 3s. 9d. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

ACID NAPHTHIONIC.—1s. 5d. per lb. 100% d/d buyer's works.

ACID NEVILLE AND WINTHER.—Spot, 2s. 7d. per lb. 100% d/d buyer's works.

ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8½d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8½d. per lb. d/d buyer's works.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.

BENZOIC ACID.—Spot, 1s. 8½d. per lb. d/d buyer's works.

*o*-CRESOL 30/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.

*m*-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

*p*-CRESOL 34·5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—1s. 10d. per lb. f.o.r. works.

DIMETHYLANILINE.—Spot, 1s. 8d. per lb., drums extra d/d buyer's works.

DINITROBENZENE.—8d. per lb.

DINITROCHLORBENZENE.—£74 per ton d/d.

DINITROTOLUENE.—48/50° C., 7½d. per lb.; 66/68° C., 9d. per lb., f.o.r. works.

DIPHENYLAMINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

*a*-NAPHTHOL.—Spot, 1s. 11d. per lb. d/d buyer's works.

*B*-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.

*a*-NAPHTHYLAMINE.—Spot, 1s. per lb. d/d buyer's works.

*B*-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

*o*-NITRANILINE.—5s. 11d. per lb.

*m*-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

*p*-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb., 5-cwt. lots, drums extra, d/d buyer's works.

NITRONAPHTHALENE.—9d. per lb.

R. SALT.—Spot, 2s. per lb. 100% d/d buyer's works.

SODIUM NAPHTHIONATE.—Spot, 1s. 6½d. per lb. 100% d/d buyer's works.

*o*-TOLUIDINE.—Spot, 8d. per lb., drums extra, d/d buyer's works.

*p*-TOLUIDINE.—Spot, 1s. 9d. per lb. d/d buyer's works.

*m*-XYLIDINE ACETATE.—3s. 1d. per lb., ex works.

## Wood Distillation Products

ACETATE OF LIME.—Brown, £8 to £8 5s. per ton. Grey, £14 to £15 per ton. Liquor, 9d. per gall.

ACETONE.—£73 per ton.

CHARCOAL.—£6 to £8 3s. per ton, according to grade and locality

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. per gall. 16° Tw.

WOOD CREOSOTE.—1s. 9d. per gall., unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. to 3s. 2d. per gall. Solvent, 4s. per gall.

WOOD TAR.—£4 5s. to £5 per ton.

BROWN SUGAR OF LEAD.—£37 per ton.

## Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 2d. per lb., according quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 8d. to 1s. 10d. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.
CADMIUM SULPHIDE.—4s. 6d. to 5s. per lb.
CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.
CARBON BLACK.—3½d. to 4 1/16d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity. drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 9d. per lb.
LITHOPONE, 30%.—£20 to £22 per ton.
SULPHUR.—£9 10s. to £13 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.
VERMILION, PALE OR DEEP.—6s. 6d.–7s. per lb.
ZINC SULPHIDE.—8d. to 11d. per lb.

## Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£38 5s. per ton, for ½ ton lots, £37 5s. for 1 ton, smaller quantities £39 5s., delivered, barrels free.
ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 11d. per lb., according to quantity.
ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., for synthetic product, according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.
ACID, BORIC B.P.—Crystal, £31 per ton; powder, £32 per ton; For one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 5d. to 1s. 6d. per lb., less 5%.
ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.
ACID, MOLYBDIC.—5s. 3d. per lb. in ½-cwt. lots. Packages extra. Special prices for quantities and contracts.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—11¾d. per lb., less 5%.
AMIDOL.—7s. 6d. to 11s. 3d. per lb., according to quantity.
AMMONIUM BENZOATE.—3s. 9d. per lb.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5-cwt. casks. Resublimated, 1s. per lb.
AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½-cwt. lots. Packages extra. Special prices for quantities and contracts.
ATROPHINE SULPHATE.—8s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BISMUTH CARBONATE.—6s. 6d. per lb.
BISMUTH CITRATE.—6s. 9d. per lb.
BISMUTH SALICYLATE.—6s. 7d. per lb.
BISMUTH SUBNITRATE.—5s. 6d. per lb.
BISMUTH NITRATE.—Cryst. 4s. 4d. per lb.
BISMUTH OXIDE.—8s. 6d. per lb.
BISMUTH SUBCHLORIDE.—8s. per lb.
BISMUTH SUBGALLATE.—6s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.
BORAX B.P.—Crystal, £21 10s. per ton; powder, £22 per ton; for one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
BROMIDES.—Ammonium, 1s. 9d. per lb.; potassium, 1s. 4½d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 7d. per lb. Prices for 1-cwt. lots.
CAFFEIN, PURE.—7s. 6d. per lb.
CAFFEIN CITRAS.—5s. 9d. per lb.
CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 6d. per lb., in 1-cwt. lots.
CAMPHOR.—Refined flowers, 2s. 10d. to 3s. per lb., according to quantity; also special contract prices.
CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.
EMETINE HYDROCHLORIDE.—58s. 6d. per oz.
EMETINE BISMUTH IODIDE.—33s. per oz.
EPHEDRINE, PURE.—13s. 9d. to 14s. 6d. per oz.
EPHEDRINE HYDROCHLORIDE.—10s. 9d. to 11s. 6d. per oz.
EPHEDRINE SULPHATE.—10s. 9d. to 11s. 6d. per oz.
ERGOSTEROL.—2s. 6d. per gm.
ETHERS.—S.G. ·730—1s. to 1s. 1d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GLUCOSE, MEDICINAL.—1s. 6d. to 2s. per lb. for large quantities.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—27s. 6d. per oz.
HYDRASTINE HYDROCHLORIDE.—85s. per oz. for small quantities.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 11d. to 3s. 4d. per lb.; potassium, 3s. 2d. to 3s. 7d. per lb.; sodium, 3s. 1d. to 3s. 6d. per lb.; for 28-lb. lots.
IRON AMMONIUM CITRATE.—B.P., 2s. 5d. per lb., for 28-lb. lots. Green, 3s. 1d. per lb., list price. U.S.P., 3s. 3d. per lb. list price
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¼d. to 8¾d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light Commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 15s. per lb. net; Synthetic, 8s. 6d. to 10s. 6d. per lb.; Synthetic detached crystals, 8s. 6d. to 10s. 6d. per lb., according to quantity; Liquid (95%), 9s. per lb.
MERCURIALS B.P.—Up to 1-cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 3d. to 1s. 5d. per lb.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—3s. 9d. to 4s. 1d. per lb.
PHENOLPHTHALEIN.—5s. 11d. to 6s. 1½d. per lb.
PILOCARPINE NITRATE.—10s. 6d. per oz.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—88s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 2d. to 3s. per lb.
POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125-lb. kegs.
POTASSIUM IODIDE.—16s. 8d. to 17s. 9d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1 cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. per oz. for 1,000-oz. lots.
QUINOPHAN.—B.P.C., 14s. 6d. to 16s. 6d. per lb. for cwt. lots.
SACCHARIN.—43s. 6d. per lb.
SALICIN.—18s. 6d. per lb.
SODIUM BARBITONUM.—8s. 6d. to 9s. per lb. for 1-cwt. lots.
SODIUM BENZOATE B.P.—1s. 9d. per lb. for 1-cwt. lots.
SODIUM CITRATE.—B.P.C. 1911, 1s. 10d to 2s. 8d. per lb. B.P.C. 1923, and U.S.P., 2s. 2d. to 3s. per lb.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. net. Crystals, 2s. 6d. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.
STRYCHNINE, ALKALOID CRYSTAL, 2s. per oz.; hydrochloride, 1s. 9½d. per oz.; nitrate, 1s. 8d. per oz.; sulphate, 1s. 9d. per oz., for 1,000-oz. quantities.
TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.
THYMOL.—Puriss, 7s. 3d. to 8s. per lb., according to quantity. Natural, 12s. per lb.

## Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—12s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—5s. per lb.
AMYL CINNAMIC ALDEHYDE.—10s. per lb.
AMYL SALICYLATE.—2s. 6d. per lb.
ANETHOL (M.P. 21/22° C.).—7s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.
COUMARIN.—12s. per lb.
CITRONELLOL.—7s. 9d. per lb.
CITRAL.—7s. 6d. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—8s. 9d. per lb.
GERANIOL (PALMAROSA).—17s. per lb.
GERANIOL.—7s. 6d. to 10s. per lb.
HELIOTROPINE.—6s. per lb.
ISO EUGENOL.—10s. 9d. per lb.
LINALOL, EX BOIS DE ROSE.—6s. per lb. Ex Shui Oil, 6s. per lb.
LINALYL ACETATE, EX BOIS DE ROSE.—8s. 6d. per lb. Ex Shui Oil, 8s. 6d. per lb.
MUSK XYLOL.—6s. 3d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—9s. per lb.
RHODINOL.—46s. per lb.

# London Chemical Market

*The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co. Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

*London, October 30, 1930.*

THE steady demand for the various chemicals during the current week has been maintained. One or two articles are in a very firm position, especially tartaric acid and cream of tartar, and prices are advancing. Export inquiry has also been quite satisfactory.

## General Chemicals

ACETONE.—Continues firm at £71 10s. to £80 per ton, according to quantity and in steady demand.

ACID ACETIC.—Firm at £30 5s. to £38 5s. for technical 80% and pure 80% at £37 5s. to £39 5s. per ton, free delivered to buyers' works and in steady request.

ACID CITRIC.—Continues quiet at about 1s. 6d. per lb., less 5%.

ACID LACTIC.—Still in good request at £41 to £42 per ton for the pale 50% by weight.

ACID OXALIC.—Unchanged at £30 7s. 6d. per ton to £32, according to quantity.

ACID TARTARIC.—The position is very much firmer at about 1s. per lb., less 5%.

ALUMINA SULPHATE.—Unchanged at £8 to £8 15s. per ton for the 17/18% iron free quality.

CREAM OF TARTAR.—Very firm at 88s. per cwt., ex warehouse, London.

COPPER SULPHATE.—About £21 to £21 10s. per ton free on rails, London.

FORMALDEHYDE.—In regular demand at about £32, ex wharf, London, for the 40% by volume.

LEAD ACETATE.—A little easier at about £35 15s. per ton for the white and £34 15s. for the brown.

LEAD NITRATE.—Unchanged at £29 10s. per ton with a steady call.

LITHOPONE.—Firm at £19 15s. to £23 per ton, according to grade and quantity.

CARBONATE OF POTASH.—96 98% arsenic free quality, £28 to £29 per ton and in good demand.

PERMANGANATE OF POTASH NEEDLE CRYSTALS, B.P.—Firm at 5½d. per lb., with a steady demand.

SODA BICHROMATE.—Remains unchanged and firm at 3⅜d. per lb., with the usual discounts for contracts.

SODIUM HYPOSULPHITE.—Commercial Crystals, £8 10s.; photographic crystals, £14 15s. per ton.

SULPHIDE OF SODIUM.—Steady at £10 5s. to £11 5s. per ton for the solid and £11 5s. to £12 5s. for the broken, carriage paid.

TARTAR EMETIC.—In steady request at about 11d. per lb.

ZINC SULPHATE.—About £12 to £12 15s. per ton.

## Coal Tar Products

The position of the coal tar products market remains unaltered from last week, and there is little or no change to report.

MOTOR BENZOL.—Unchanged at about 1s. 5½d. to 1s. 6½d. per gallon, f.o.r.

SOLVENT NAPHTHA.—Quoted at about 1s. 2½d. to 1s. 3d. per gallon.

HEAVY NAPHTHA.—Obtainable at about 1s. 1d. per gallon f.o.r.

CREOSOTE OIL.—Remains unchanged, at 3d. to 3½d. per gallon f.o.r. in the North, and at 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Quoted at 1s. 8d. per gallon for the 98/100 % quality, and at 1s. 6d. per gallon for the dark quality 95/97%.

NAPHTHALENES.—The firelighter quality is quoted at £3 10s. to £3 15s. per ton, the 74/76 quality at about £4 to £4 5s. per ton, and the 76/78 quality at about £5 per ton.

PITCH.—Worth 37s. 6d. to 42s. 6d. per ton, f.o.b., East Coast port.

## Nitrogen Fertilisers

*Sulphate of Ammonia.—Export.*—The market remains unchanged for prompt delivery and there are very few inquiries for forward positions for which slightly higher prices are being quoted. *Home.*—There is very little interest in this market except that fertiliser manufacturers are purchasing supplies regularly.

*Nitrate of Soda.*—It is reported that the production shows a considerable decline on that of last year. It appears that the new company controlling the nitrate industry will limit production until the heavy stocks, both in Chile and the consuming markets, are reduced. Prices remain unchanged.

## Latest Oil Prices

LONDON, October 29.—LINSEED OIL was steady and about unchanged. Spot, ex mill, £27; November, £24 12s. 6d.; November-December, £24 5s.; January-April, £23 10s.; May-August, £23. RAPE OIL was inactive. Crude extracted, £30 10s.; technical refined, £32, naked, ex wharf. COTTON OIL was steady. Egyptian crude, £23 10s.; refined common edible, £28; deodorised, £30, naked, ex mill. TURPENTINE was steady, unchanged. American, spot, 33s. 9d.; November-December, 34s.; January-April, 35s. 9d.; Russian, spot, 31s. 3d. per cwt.

HULL.—LINSEED OIL, naked, closed for spot and October at £26 15s.; November-December, £25 10s.; January-April, £24; May-August, £23 5s. COTTON OIL, naked, Egyptian crude, spot, £23 10s.; edible refined, spot, £26; technical, spot, £26 15s.; deodorised, spot, £28. PALM KERNEL OIL.—Crude, naked, 5½ per cent., spot, £25. GROUNDNUT OIL.—Crushed/extracted, spot, £28; deodorised, spot, £32. SOYA OIL.—Extracted and crushed, spot, £24 10s.; deodorised, spot, £28. RAPE OIL.—Crushed/extracted, spot, £28 10s.; refined, spot, £30 10s. per ton. TURPENTINE, spot, 36s. 3d. per cwt. CASTOR and COD, unchanged. Net cash terms, ex mill.

## South Wales By-Products

THERE is very little change to report in South Wales by-product activities. The demand for pitch continues to be slow, but there are indications that an improvement is pending. Quotations are unchanged. The call for road tar is small, but values are unchanged round about 13s. per 40-gallon barrel delivered. There is a slightly better demand for solvent naphtha, but heavy naphtha remains inactive. There is no change in values. Refined tars have a steady, but moderate, market with values unchanged for coke oven and gasworks tar. Patent fuel and coke exports are about the same, the increased autumn export not having materialised yet. Patent fuel prices for export are as follows:—21s. 6d., ex-ship, Cardiff; 20s., ex-ship Newport; 20s., ex-ship, Swansea. Coke prices are:—Best foundry, 34s. to 36s. 6d.; good foundry, 26s. to 30s.; furnace, 17s. 6d. to 21s. 6d. Oil imports into Swansea during the four week period ending October 21st amounted to 25,294,300 gallons.

## Scottish Coal Tar Products

PITCH export business continues dull but creosote oil is in slightly better demand. Cresylic acid has also been in better call but prices continue easy owing to the large stocks available.

*Cresylic Acid.*—Orders are more numerous but quotations remain unchanged. Pale, 99/100 per cent., 1s. 8d. to 1s. 9d. per gallon; pale, 97/99 per cent., 1s. 7d. to 1s. 8d. per gallon; dark, 97/99 per cent., 1s. 6d. to 1s. 7d. per gallon; high boiling, 1s. 7½d. to 1s. 9½d. per gallon; all f.o.r. makers' works in bulk.

*Carbolic Sixties.*—The nominal price is unchanged at about 2s. per gallon.

*Creosote Oil.*—Virgin oils are now quite scarce but timber qualities continue dull. Specification oil, 2¾d. to 3d. per gallon; gas works ordinary, 3¼d. to 3¾d. per gallon; washed oil, 3d. to 3½d. per gallon; all free on rails works.

*Coal Tar Pitch.*—The market is quiet with quotations unchanged. Nominal export price is 45s. per ton, f.a.s. Glasgow, and home price is about 45s. per ton ex makers' works in bulk.

*Blast Furnace Pitch.*—Trading is on a small scale. Fixed prices are unaltered at 30s. per ton, f.o.r. works for home trade, and 35s. per ton f.a.s. Glasgow for export.

*Refined Coal Tar.*—Some large enquiries are on the market for delivery next season. To-day's price is 3d. to 3½d. per gallon, f.o.r. in buyers' packages.

*Blast Furnace Tar.*—Unchanged at 2¾d. per gallon.

*Crude Naphtha.*—The price is steady at about 4d. per gallon. Production is low in this area.

*Water White Products.*—Only small orders are passing. Motor benzole is 1s. 4½d. to 1s. 5d. per gallon; 90/160 solvent, 1s. 2d. to 1s. 3d. per gallon; 90/190 heavy solvent, 1s. to 1s. 0½d. per gallon; all f.o.r. makers' works.

## Ford Filter Papers

FILTER papers in wide variety for all technical, scholastic and industrial purposes are included in the range manufactured by T. B. Ford, Ltd., Snakely Paper Mill, Loudwater, Bucks. This form has recently brought out a useful price list and sample folder containing within the cover at either end several specimens of papers. Nineteen grades of filter papers are described with prices for stock sizes of from 1¼ in. to 39¼ inch diameter, and also for 24 in. by 24 in. sheets. Ford filter pulp, which is extensively used in breweries and distilleries and generally for the clarification of beverages is offered both plain and mixed with a percentage of asbestos. It can be washed and used repeatedly.

# Scottish Chemical Market

*The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

*Glasgow, October 28, 1930.*

THE Scottish heavy chemical market has not been so satisfactory. Business is generally dull.

### Industrial Chemicals

ACETONE.—B.G.S.—£71 10s. to £80 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £47 to £58 per ton; pure, £37 5s. per ton; technical, 80%, £36 5s., delivered in minimum 1-ton lots.

ACID, BORIC.—Granulated commercial, £22 per ton; crystals, £23; B.P. crystals, £31 per ton; B.P. powder, £32 per ton, in 1-cwt. bags, delivered free Great Britain in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at the same price, viz.: 3¼d. per lb., ex store. On offer from the Continent at 3⅛d. per lb., ex wharf.

ACID, SULPHURIC.—£3 2s. 6d. per ton, ex works, for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 11½d. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 1s. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted at round about £8 15s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton., c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10½d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Spot material obtainable at round about £31 per ton, ex wharf. On offer for shipment from China at about £29 per ton, c.i.f. U.K.

ARSENIC, WHITE POWDERED.—Quoted £19 per ton, ex wharf, prompt shipment from mines. Spot material still on offer at £20 5s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports. For Continental material our price would be £10 per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £4 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r. works, or at £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £33 per ton, ex store. Continental on offer at about £32 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 per ton, ex wharf.

LEAD, RED.—Price now £33 per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £46 per ton, c.i.f. U.K. ports.

LEAD, ACETATE.—White crystals quoted round about £39 to £40 per ton ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE.—GROUND CALCINED.—Quoted £9 per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 o.p. quoted 1s. 8d. per gallon less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4½d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer, £25 10s. per ton ex store. Offered from the Continent at £24 15s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99⅔/100% POWDER.—Quoted £26 5s. per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb. ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb. ex wharf.

SODA CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77% £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums, all carriage paid, buyer's station, minimum four-ton lots. For contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3⅞d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Chilean producers now offer at £10 2s. per ton, carriage paid, buyer's sidings, minimum six-ton lots, but demand in the meantime is small.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices, 55s. per ton, ex works; 57s. 6d. per ton, delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, all delivered buyers' works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra. Crystals 2s. 6d. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £20 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £12 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

## Merger Movement in U.S.A. Chemical Industry

THE merger movement in the American chemical industry has proceeded at an unusually swift pace, both last year and this, according to *The Index* of the New York Trust Co. Owing to the large number of its by-products, interlocking markets, costly research requirements, and continuous competitions with new processes and products, the chemical industry is particularly adapted to, or interested in, concentration. Organisation of the industry is highly developed and well integrated. In the United States each of the three major American companies, the Allied Chemical and Dye Corporation, E. I. Du Pont de Nemours and Co., and the Union Carbide and Carbon Corporation, has its own distinctive field of operations within which it maintains a commanding position in the domestic market.

"A recent example of international co-operation is the development in Germany and the application in the United States by German and American interests in collaboration, of processes for the hydrogenation of coal to produce oil. It is predicted by many authorities that the production of chemicals from petroleum and natural gas will form the basis of a huge industry in the future."

## Chemical By-Products in Manchuria

THE Anshan Iron and Steel Works, a subsidiary of the South Manchuria Railway Co., which has recently increased its furnace capacity to 280,000 tons, now has 50 new coke ovens having a capacity of 300 tons per day. This company produced the following by-products in 1929: Sulphate of ammonia 4,016 long tons, tar 3,090,641 gallons, benzol 597,839 gallons, coke 280,775 metric tons, pitch 7,447 metric tons, naphthaline, crude and refined, 400 metric tons, creosote 871,794 gallons, and sulphuric acid 5,466 metric tons. In addition to this by-product output, the Penhsihu Coal and Iron Mines produced in 1929 sulphate of ammonia 1,114 tons, coal tar 2,437 tons and sulphuric acid 1,154 tons.

## Manchester Chemical Market

(From Our Own Correspondent.)

*Manchester, October 30, 1930.*

Rather mixed conditions have been in evidence on the chemical market on this centre during the past week, and whilst some sellers report a slight improvement in selling conditions, others find the demand much about the same as it has been during the past few weeks, with most consumers, so far as actual new business is concerned, restricting commitments to deliveries not too far ahead. A satisfactory feature is that contract deliveries are keeping up fairly well, with, in some instances, a tendency to improve a little. Taking the market as a whole, prices have kept up reasonably well.

### Heavy Chemicals

Prussiate of soda meets with a fair amount of inquiry, and values in this section are well maintained at from 4¾d. to 5¼d. per lb., according to quantity. Phosphate of soda is in moderate request and at up to about £10 10s. per ton for the dibasic quality prices are pretty well held. Alkali is firm at round £6 per ton, and a quietly steady business in this material is being done. Not a great deal of interest has been reported this week in the case of sulphide of sodium, though offers keep up at from £8 10s. to £9 per ton for the 60-65 per cent. concentrated solid quality and £7 10s. for the commercial grade. Caustic soda is firm at from £12 15s. to £14 per ton, in contracts and according to quality, and a fair movement is report.d. With regard to bicarbonate of soda, a quietly steady demand is being experienced and quotations are maintained at about £10 10s. per ton. Chlorate of soda is on the quiet side, but there has been no further change in the price position, current values being at about £23 to £23 10s. per ton. Bichromate of soda meets with a moderate amount of inquiry at 3⅞d. per lb., less 1 to 3½ per cent. according to quantity. Hyposulphite of soda is in rather slow demand at the moment, but there has been little alteration in prices, the photographic being at about £15 per ton and the commercial at from £9 to £9 10s. Saltcake is about maintained at up to £3 per ton, with sales of this material on moderate lines.

On the whole, the potash products keep up at round recent levels. Chlorate is on offer at from £24 10s. to £25 per ton, a quiet business being put through. Yellow prussiate of potash meets with a fair amount of inquiry, and prices are firm at from 6¾d. to 7¼d. per lb., according to quantity. Permanganate of potash is only moderately active, but values are steady at about 5½d. per lb. for the B.P. grade and 5¼d. for the commercial. Carbonate of potash and caustic potash are in fair request, and there has been little further change in the price position, current values being at round £24 10s. and £28 per ton. Bichromate of potash is in moderate demand on the basis of 4⅛d. per lb., less 1 to 3½ per cent. discount.

Sulphate of copper shows little actual change on balance for the week, but at about £21 per ton, f.o.b., prices are not too strong and buying interest is only moderate. A quiet trade is passing in arsenic at £17 per ton at the mines for white powdered, Cornish makes. Sales of the lead materials are of limited extent, with quotations for the white and brown acetates at round £35 and £34 10s. per ton, and nitrate at about £29. The acetates of lime are slow, with grey quoted at £14 per ton and brown at £7 5s.

### Acids and Tar Products

A fair amount of buying interest has been reported in the case of acetic acid, values of which keep up at from £47 to £51 per ton for the glacial quality, and about £37 per ton for the 80 per cent. commercial material. The demand for citric acid at the moment is on a quiet scale, and quotations, at round 1s. 5¾d. per lb., are showing indications of renewed easiness. Tartaric acid, however, has shown little change on balance, to-day's prices being at about 11¼d. per lb. Oxalic acid is in rather slow demand at £1 11s. 6d. per cwt., ex store.

Pitch is attracting only moderate attention, with current offers at about 45s. per ton, f.o.b. Creosote oil meets with a quiet demand, but prices in this section are reasonably steady at up to about 4¼d. per gallon, naked, at works. Solvent naphtha meets with a fair amount of inquiry at 1s. 3d. per gallon, naked. Nor a great deal of buying interest is being shown in carbolic acid, which is quoted at 1s. 8d. per gallon, naked, for crude 60's, and 6½d. to 7d. per lb., f.o.b., for crystals.

## Company News

New Tamarugal Nitrate Co., Ltd.—The annual general meeting will be held at the Chile office of the company, Valparaiso, on December 30, at 11 a.m.

John Knight, Ltd.—It is proposed to increase the capital of the company by the creation of 100,000 new ordinary £1 shares ranking in all respects *pari passu* with the existing ordinary shares.

Metallgesellschaft A.-G. of Frankfort.—On account of the decline in metal prices, the company, which is connected with the British undertaking of Amalgamated Metal Corporation, propose a reduction in the dividend from 1 to 2 per cent. Last year the company paid 8 per cent.

British Cyanides Co., Ltd.—The report for the year ended June 30, 1930, states that the net profit was £3,684, against £10,025 a year ago. With £11,076 brought forward, there is £14,760, from which has to be deducted the dividend for the year to December 31, 1929, on the preference shares, the interim dividend on the ordinary shares, together with the Rock Investment Company's percentage thereon, amounting in all to £14,232, leaving £529 to be carried forward.

Haslam and Newton.—The directors have issued the following statement with regard to the 7½ per cent. £1 cumulative preference shares: As the accounts for year ended September 30, 1930, are not yet completed, the directors do not feel justified, in the best interests of the company, in paying the half-year's dividend, due November 1, 1930, at the present time, and have therefore decided to postpone payment. The directors state that they are satisfied that they are getting their full share of what business there is available. The companies in which investments have been made are on the whole giving promise of satisfactory returns.

## Chemistry's Service to Railways

### Address by Chief Chemist of L.M.S.

An account of the part played by chemists in the work of the railways was given by Dr. Lewis-Dale, Chief Chemist to the L.M.S. Railway, at a joint meeting of the Liverpool section of the Society of Chemical Industry and the Institute of Chemistry, at Liverpool University, on Friday, October 24. At the outset Professor Roberts, a former chairman, introduced the new chairman of the local section of the Society of Chemical Industry, Dr. William Trantom, who subsequently presided.

Dr. Lewis-Dale said the railways were among the pioneers in calling science to the aid of industry. The earlier rails were made of iron. The chemist's advice was of great practical service in regard to metals. The coal bill of the railways in this country amounted to £5,000,000 a year, and the chemist was constantly at work on this subject, as a saving of 1d. per lb. per mile meant a saving of £60,000 a year. Similarly he investigated lubricants and water supplies.

The Chairman moved that the congratulations of the Society should be sent to Mr. E. H. Thompson, on his selection as Liverpool's next Lord Mayor.

Dr. Trantom presented the Leverhulme prize—based on the result of the B.Sc. (Honours) Liverpool examination—to Mr. W. J. Lowe, and the Society of Chemical Industries prizes to students of the Liverpool Central Technical School to Leslie Arthur Leyland and Leslie Parker.

The secretary's report referred to the preparations being made for the jubilee celebrations of the society on July 30 next.

### Bulmer Rayon Co., Ltd.

Speaking at the fifth ordinary general meeting of the Bulmer Rayon Co., Ltd., held in London on Wednesday, Sir William Bulmer (the chairman) said that the result of the year's operations was a profit of £302, compared with a loss of £1,608 for the previous year. Their holding in the British Acetate Silk Corporation at January 31, 1930, had a market value of only £62,500, whereas it stood in their books at £558,815. The directors sincerely hoped that some arrangement would be made to rehabilitate the fortunes of the British Acetate Silk Corporation.

## Chemical and Metallurgical Corporation

### Interim Statement by Shareholders' Committee

At the annual meeting of the Chemical and Metallurgical Corporation, Ltd., in April last, a shareholders' committee was formed to confer with the board on the position and on the events which had led up to domestic litigation. The shareholders' committee on Wednesday issued a statement that :—

"While all questions relating to the previous management of the affairs of the corporation are *sub judice* and cannot therefore be reported on at this stage, the committee thinks it desirable to make an interim statement as to the present position.

"Our investigation," the statement continues, "enables us to say that the Corporation has at its command sufficient funds to carry on its business according to present plans.

"The reorganisation of the works (now practically complete) has resulted in substantial economies in production costs and overhead expenses.

"During the month of July the plant was working at slightly under 50 per cent. capacity, and a special examination by the company's auditors of the accounts for that month showed a small surplus after charging all outgoings, including an allowance for depreciation."

Dr. E. P. Andreae, the chairman, says, in a circular : "I am able to confirm the facts ascertained by your committee. The company is now deriving benefit from the recent reorganisation at Runcorn, and, having ample funds at its disposal for running the plant at full capacity, it is in the best possible position to take advantage of any revival in trade." The plant had shown itself to be self-supporting and it was definitely capable of profitably extending the company's position.

### Colour Printing of Fabrics

Mr. John A. Reekie gave an interesting lecture to the Manchester Athenæum Textile Society on Tuesday evening on "The Science of Colour Application to Fabrics" and showed a large number of samples of exquisitely printed fabrics in a wide range of colours.

Mr. Reekie said it seemed to him that in the calico-printing branch of the textile trade there was a greater diversity and interest than in any other trade he knew. The combination in calico printing of art, science, and mechanism made the work a real joy. In the application of the design to the fabric the calico printer had to exercise every bit as much art as the engraver who took an engraving from a famous picture and was paid a big price for it.

## Tariff Changes

Fiji.—In accordance with the Customs Drawback Amendment Regulation, drawback is allowed in respect of the following articles : tallow, resin, caustic soda and salt used in the manufacture of laundry soap, and pumice, tallow, caustic soda and carbolic acid used in the manufacture of sand soap.

Spain.—As from October 12, the export of nitrate of soda is prohibited.

Roumania.—The following reductions in import duties have now come into force : Activated carbon (granulated), 1,500 lei per 100 kilogs (in place of 3,000 lei) ; pulverised vegetable carbon for decoloration and purification of liquids, 325 lei per 100 kilogs (instead of 3,000) ; iron oxides, 180 (240) ; ultramarine in blocks or powder 400 (500). Sodium hypochlorite is now dutiable at 190, and calcium hydrosulphate at 100 lei per 100 kilogs.

## Chemical Trade Inquiries

*The following inquiries, abstracted from the "Board of Trade Journal" have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.*

Australia.—The Post and Telegraph Department, Melbourne, is calling for tenders to be presented in Australia by November 18, for the supply of V.I.R. lead- and antimony-covered cable. (Reference No. A.X. 10,400.)

France.—An agent in Paris desires to represent British exporters of china clay. (Reference No. 395.)

# Commercial Intelligence

*The following are taken from printed reports, but we cannot be responsible for any errors that may occur.*

## London Gazette, &c.

### Winding-Up Petition

TIMIL PRODUCTS, LTD. (W.U.P., 1/11/30.) A petition for winding-up has been presented, and is to be heard at the Royal Courts of Justice, Strand, London, W.C., on November 3.

### Company Winding Up Voluntarily

MORUM, YATES AND EDWARDS, LTD. (C.W.U.V., 1/11/30.) By special resolution October 15, D. Hill, of Broads, Paterson and Co., 1, Walbrook, London, E.C.4, appointed as liquidator.

### Bankruptcy Information

BOYDELL, George Wyndham, 21, Adelphi Street, Burnley, trading as THE BANK TOP DYEING AND DRY CLEANING WORKS, dyer and cleaner. (R.O., 1/11/30.) Receiving order, October 21. Debtor's petition. First meeting, October 31; 3.45 p.m., Official Receiver's Office, District Bank Chambers, Blackburn. Public examination, December 15, 11 a.m., County Court House, Bankhouse Street, Burnley.

### Partnerships Dissolved

DUESBURY BROS. AND BILL (Arthur Edward DUESBURY, Alfred Ernest DUESBURY and Clement Henry BILL), varnish manufacturers, Faraday Works, Monmore Green, Wolverhampton, by mutual consent as from September 30, 1930, so far as concerns A. E. Duesbury, who retires from the firm. Debts received and paid by A. E. Duesbury and C. H. Bill, who will continue the business, under the style of Duesbury and Bill.

ELBON OIL PRODUCTS (Stanley SINGLETON and David NOBLE), oil merchants, East Street, Newton Heath, Manchester, by mutual consent as from October 20, 1930. Debts received and paid by S. Singleton who will continue the business.

## New Companies Registered

METAFILTERS (HOME SALES), LTD.—Registered October 23. Nominal capital, £100 in £1 shares. Objects : To carry on the business of merchants, agents, manufacturers and retailers of filters and filter media of all kinds, etc. A director : J. Parker, 58, Northampton Road, Addiscombe, Surrey.

WILMUR, LTD., British Columbia House, 1, Regent Street, Waterloo Place, London, S.W.—Registered October 25. Nominal capital, £1,000 in £1 shares. Manufacturers, producers, importers and exporters of and dealers in all kinds of chemicals, glass, and all articles and things in connection with the manufacture of which glass is used, drugs, dyestuffs, chemical and scientific apparatus, soap, perfume, etc. Directors : D. Wilkie, Valerie McGown.

### Goodlass, Wall and Associated Lead Fusion

Mr. Justice Maugham in the Companies Court, on Monday, sanctioned a scheme of arrangement for the fusion of the interests of Goodlass, Wall and Co., Ltd., paint and varnish manufacturers, of Liverpool, and Associated Lead Manufacturers, Ltd., under the name of Goodlass, Wall and Lead Products, Ltd.

Mr. Lionel Cohen, K.C., supporting the scheme, gave details of the capital of the merging companies and of the proposed capital of the new company. He explained that the Associated Lead Manufacturers, Ltd., was a company having interests in companies carrying on similar businesses to that of Goodlass, Wall and Co. This was not a case, said Mr. Cohen, where there was any attempt to assess the shares of dissentient shareholders because they were all getting fully paid shares in the new company. Great care had been taken in preparing the scheme.

His lordship said the scheme was one which the court ought to sanction, and he did so.